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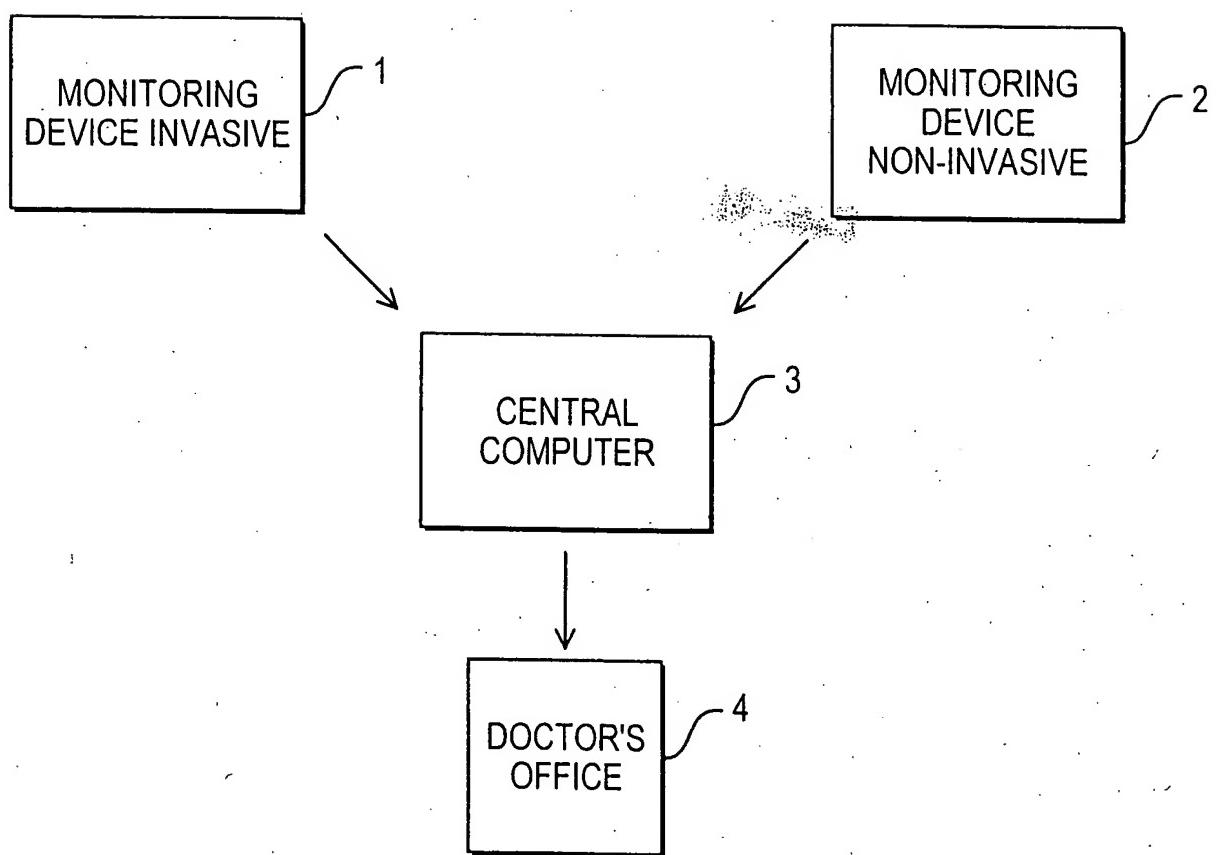
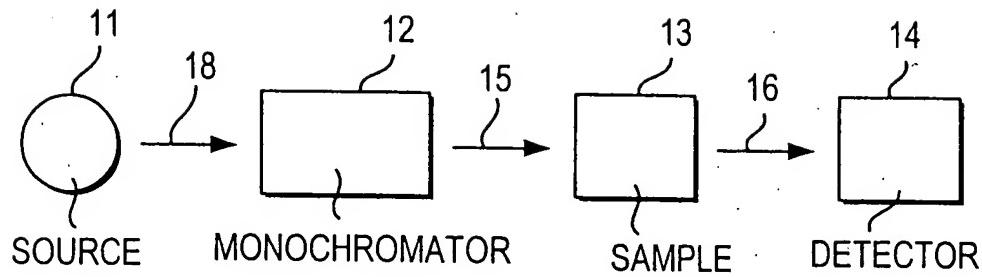
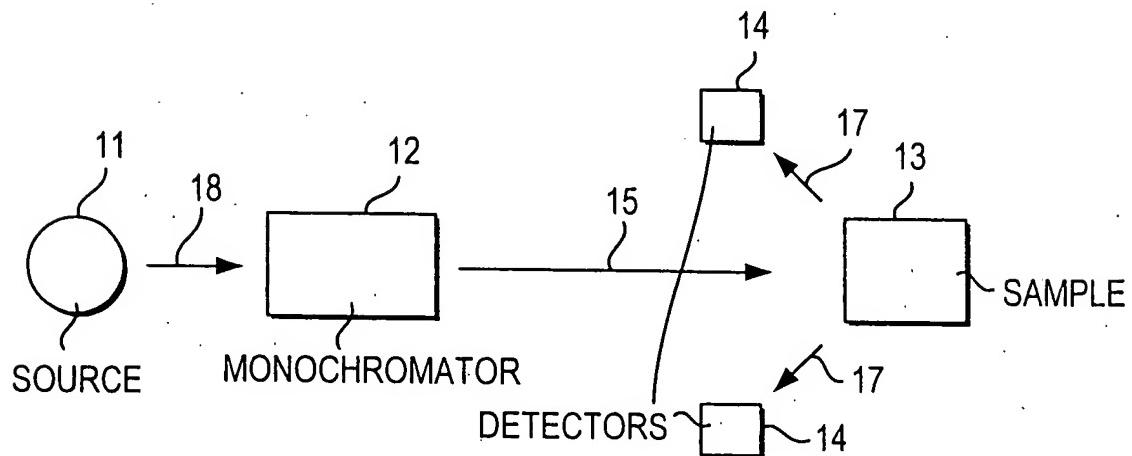


FIG. 1



NEAR-INFRARED TRANSMITTANCE (NIT)

FIG. 2(A)



NEAR-INFRARED REFLECTANCE (NIR)

FIG. 2(B)

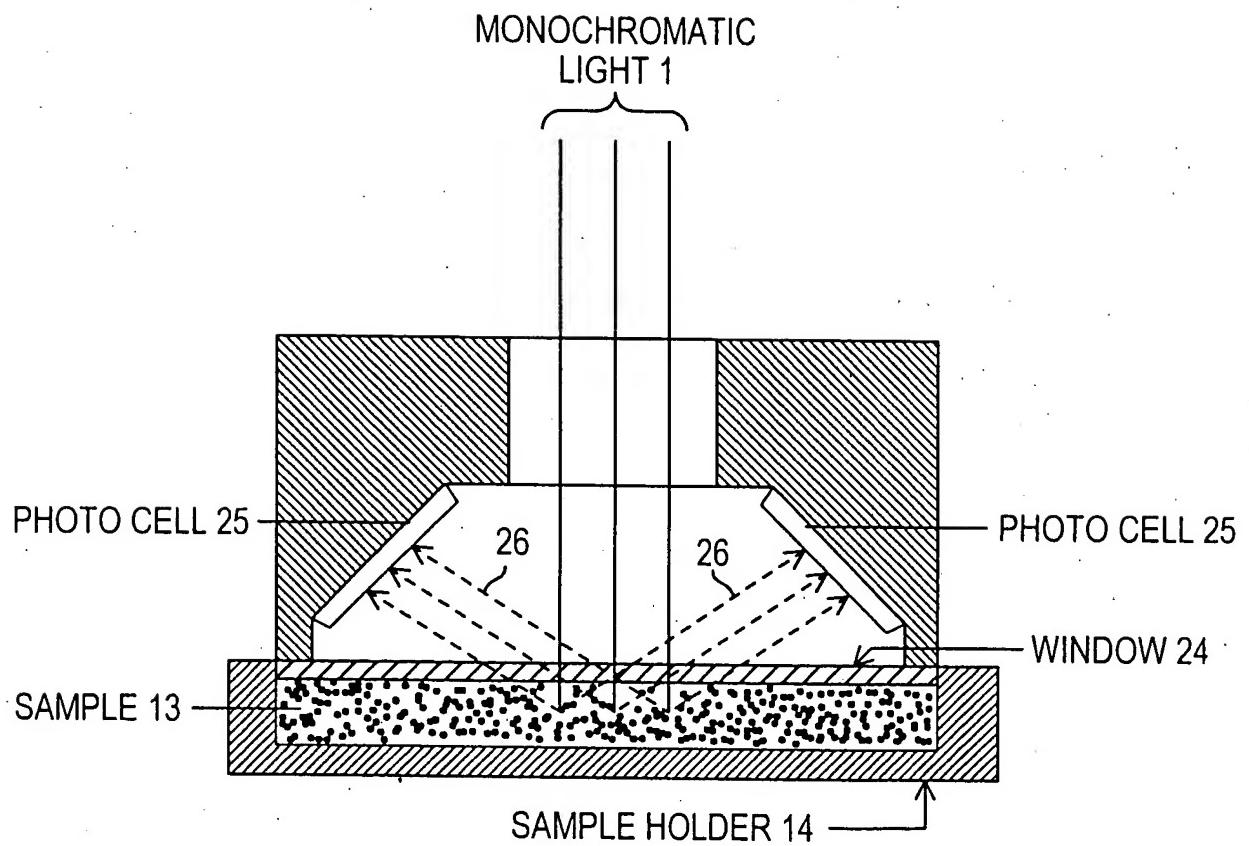


FIG. 3

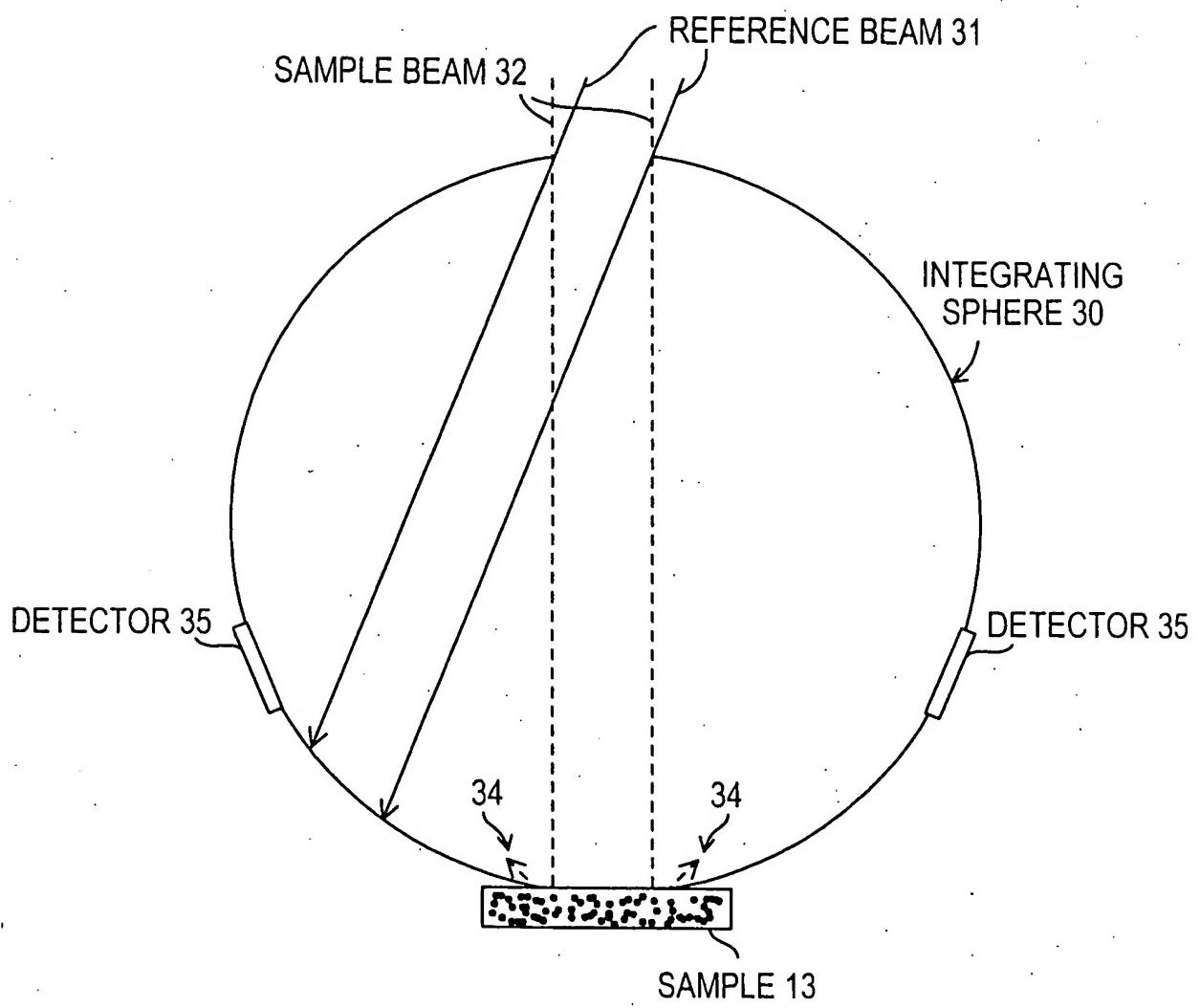
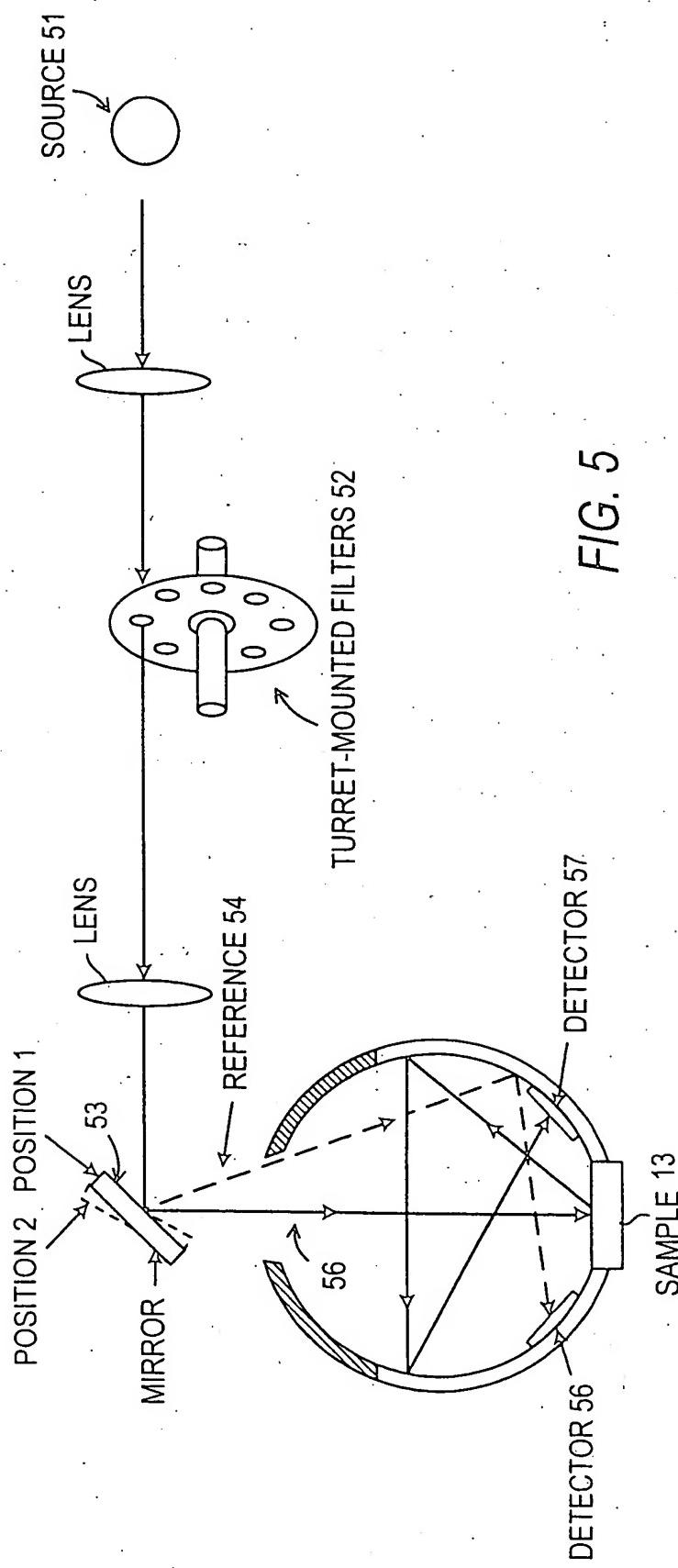


FIG. 4



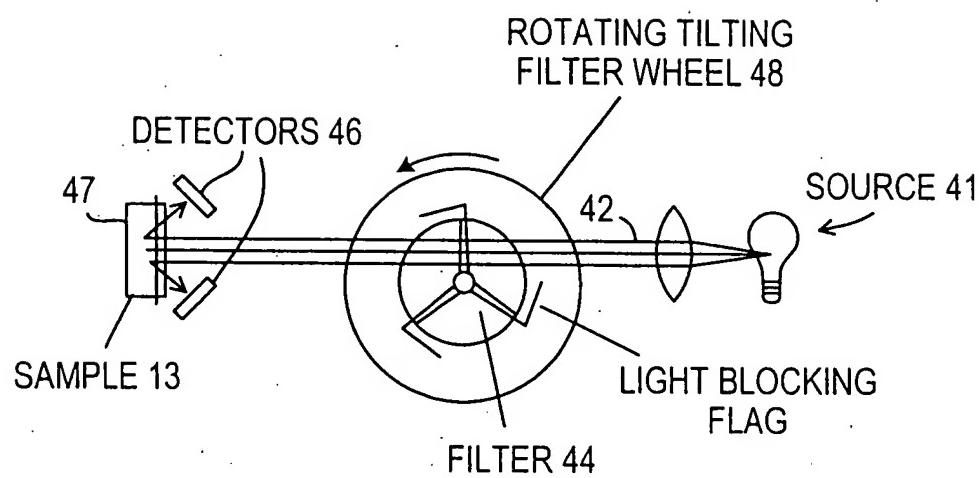


FIG. 6

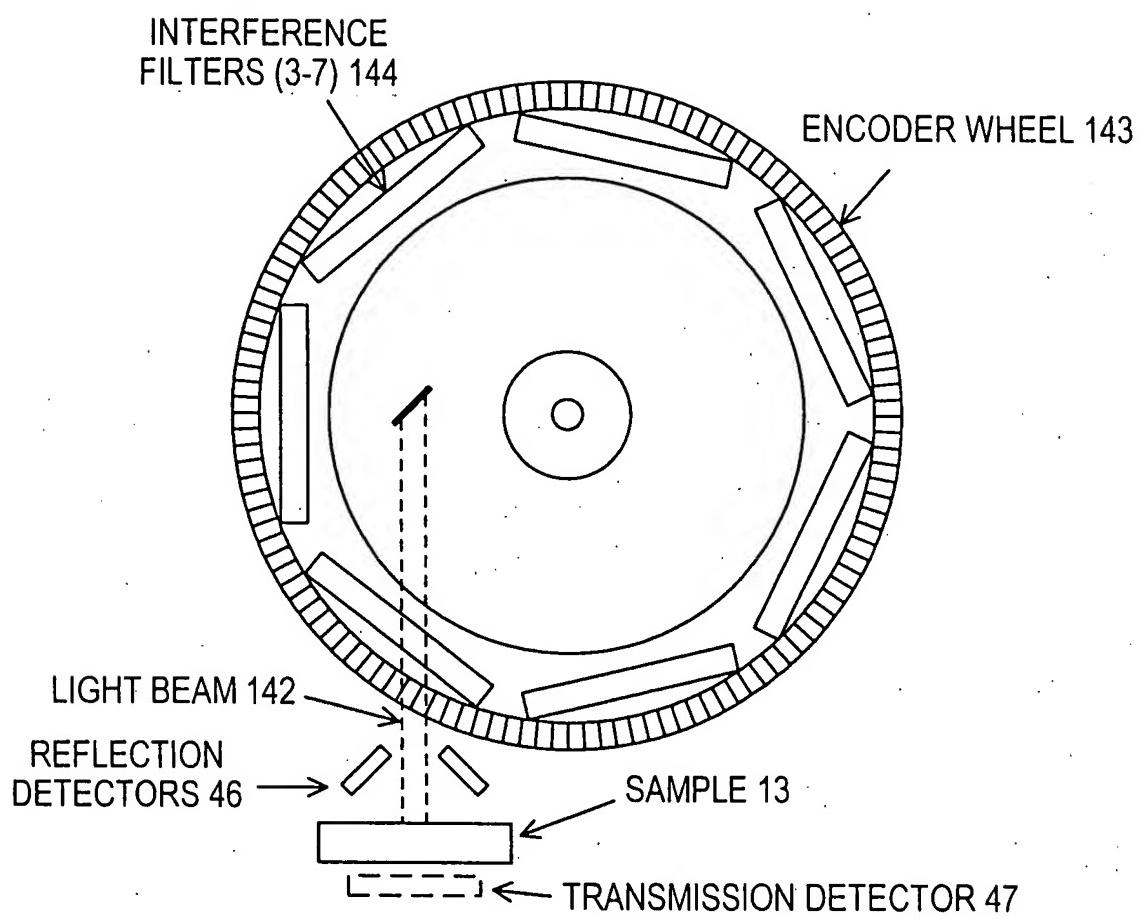


FIG. 7

FIG. 8(A)

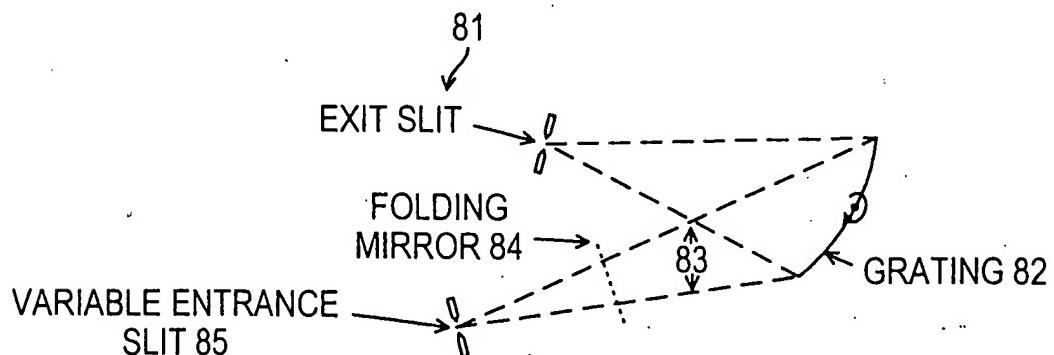
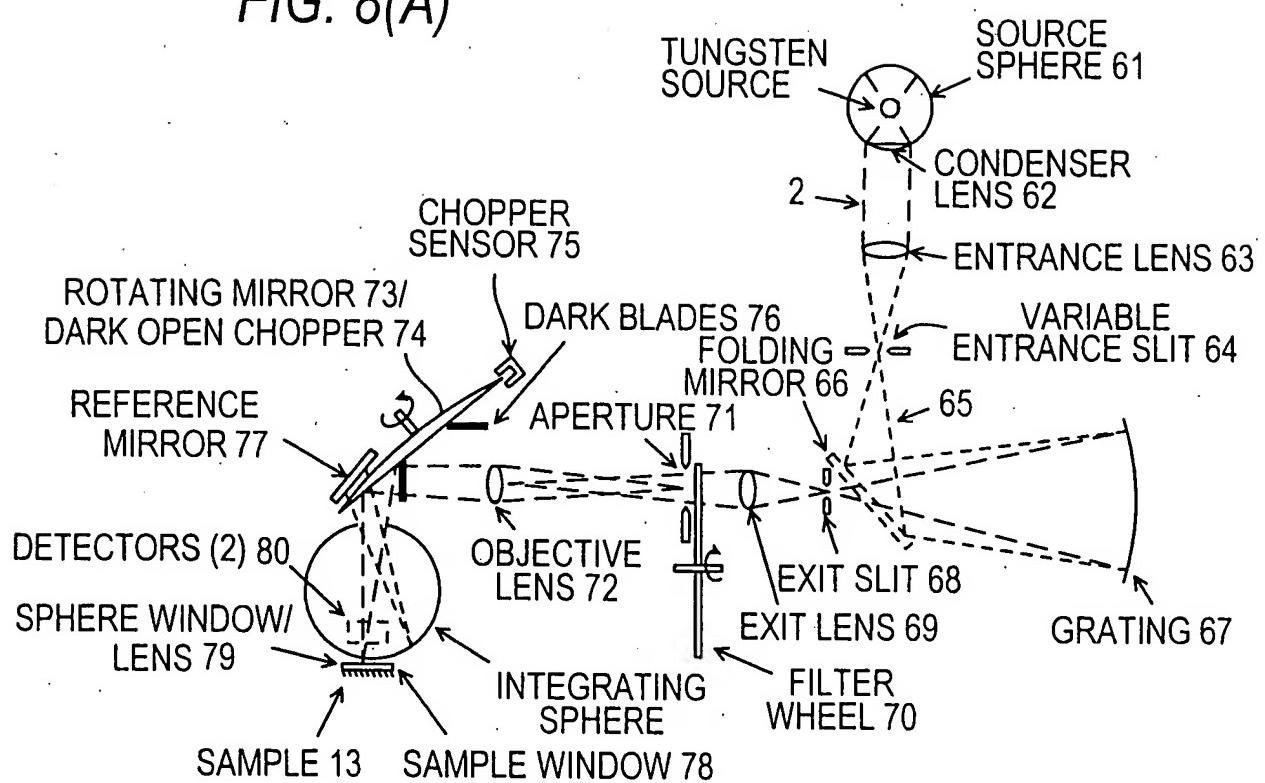


FIG. 8(B)

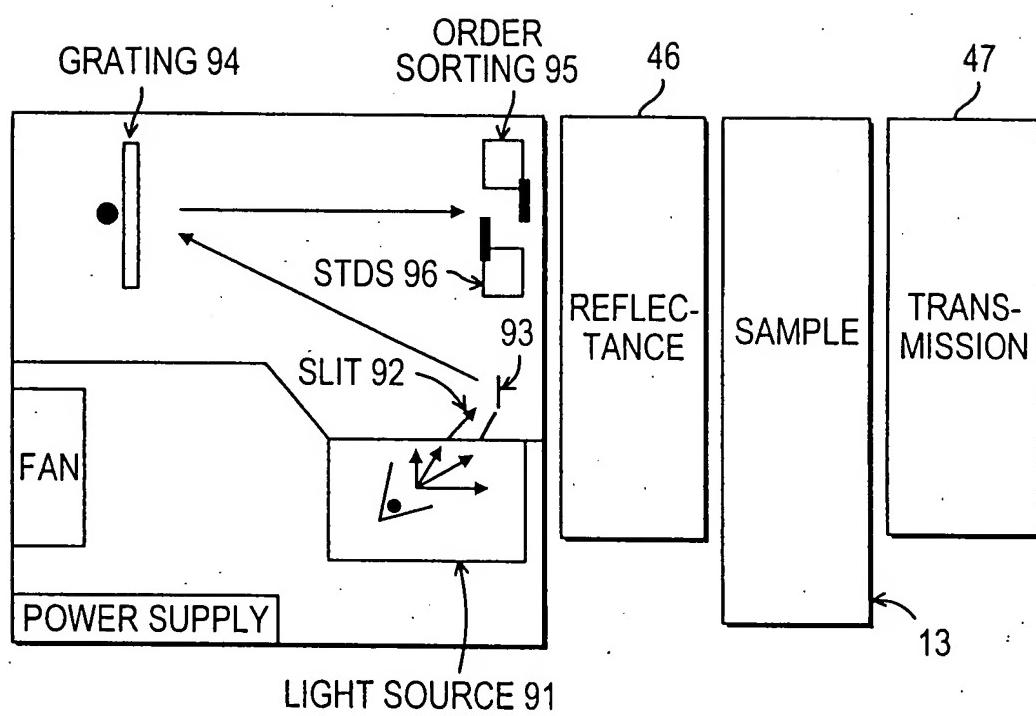


FIG. 9

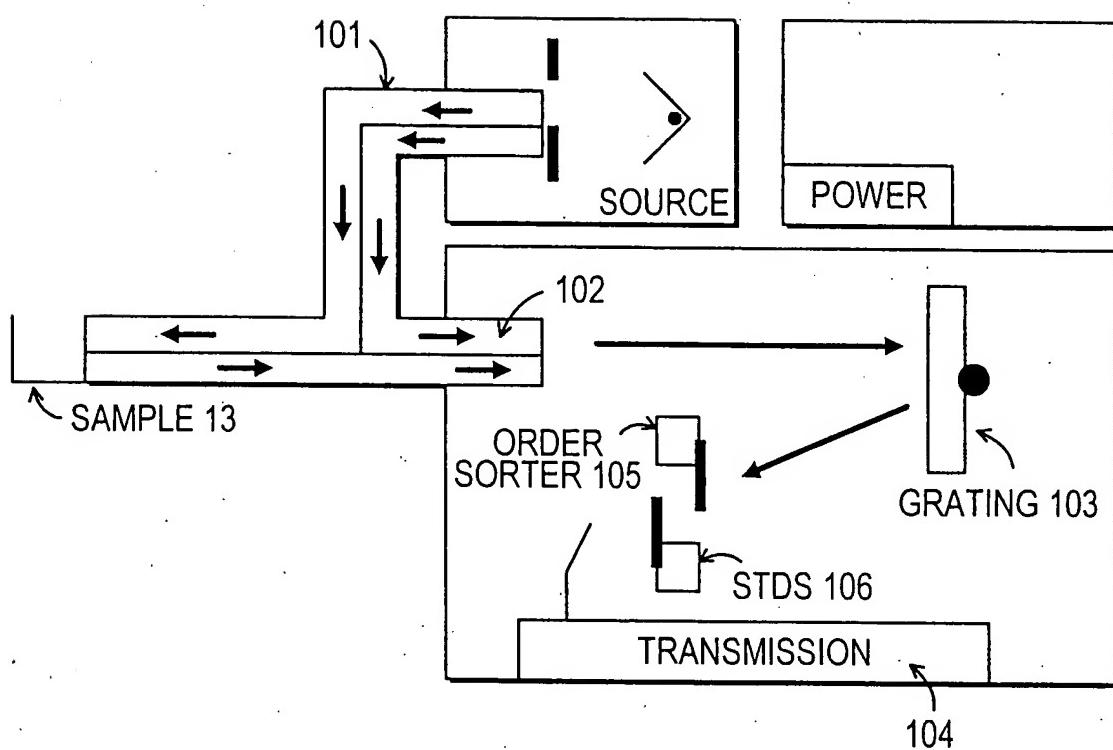


FIG. 10

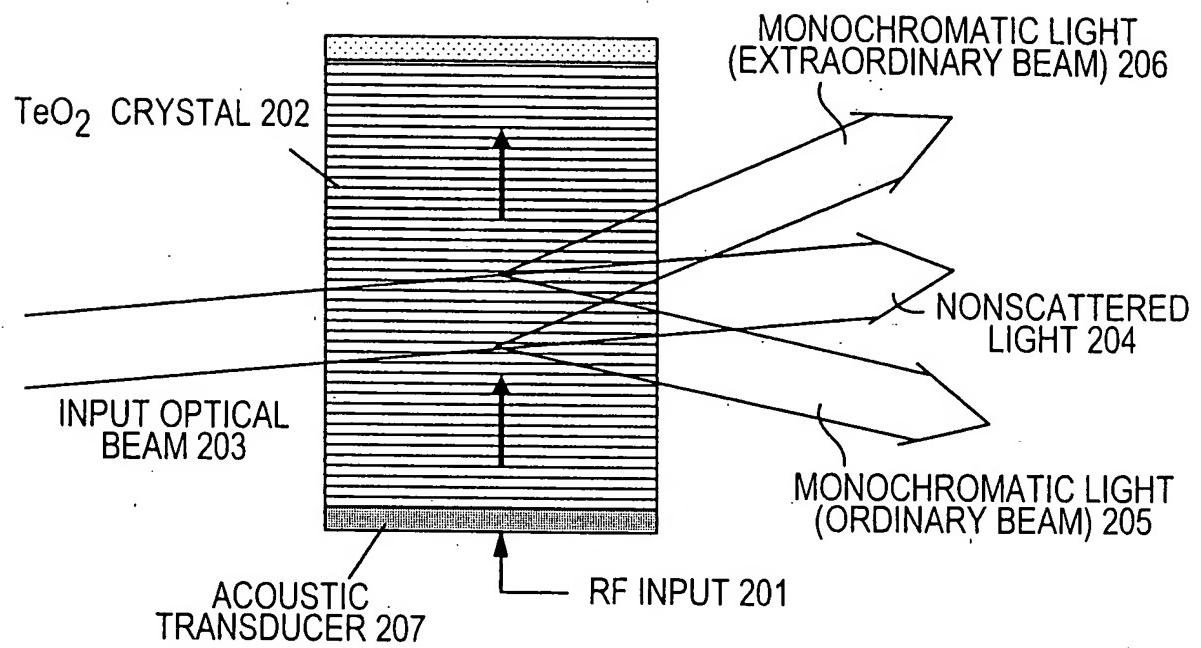


FIG. 11

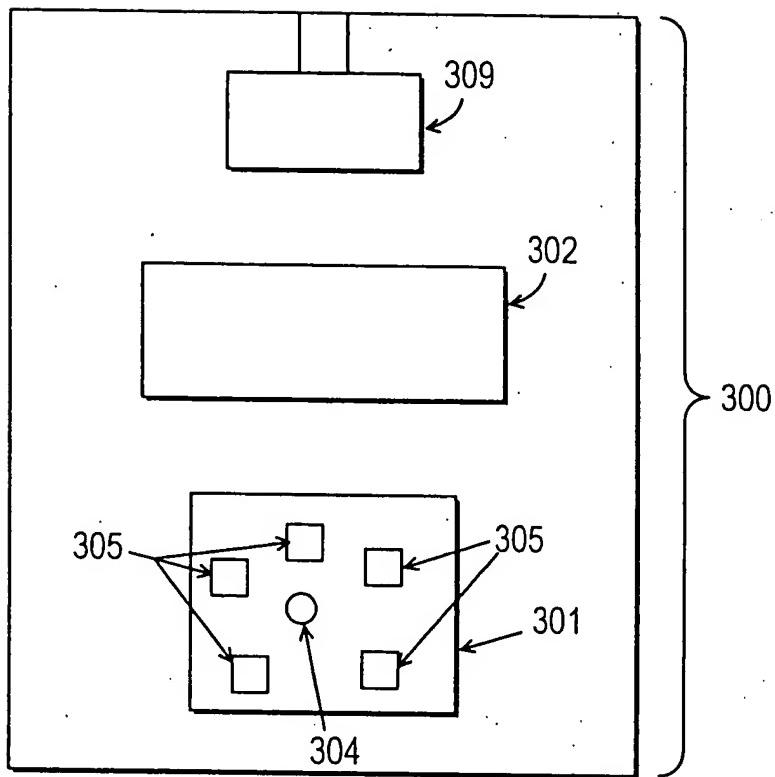


FIG. 12(A)

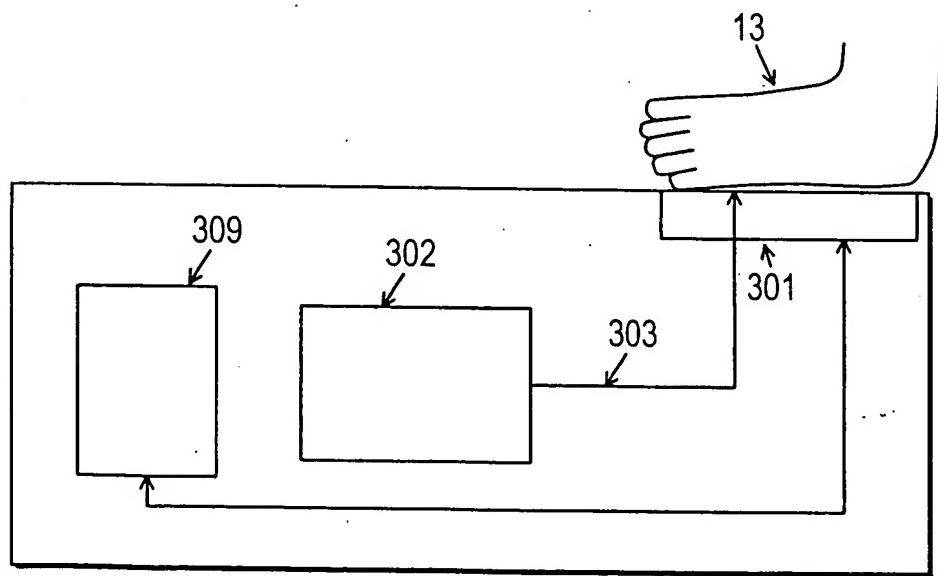


FIG. 12(B)

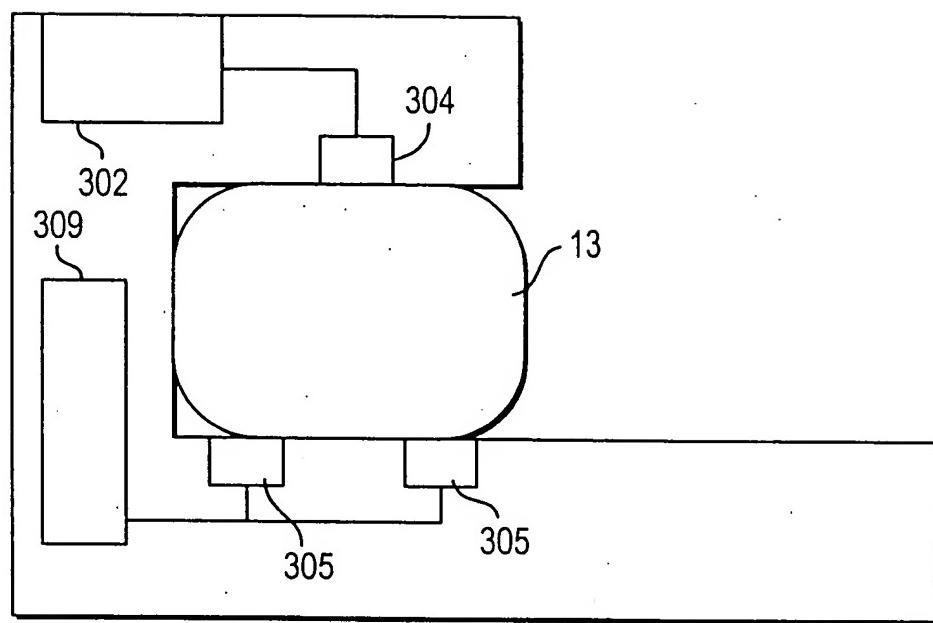


FIG. 12C

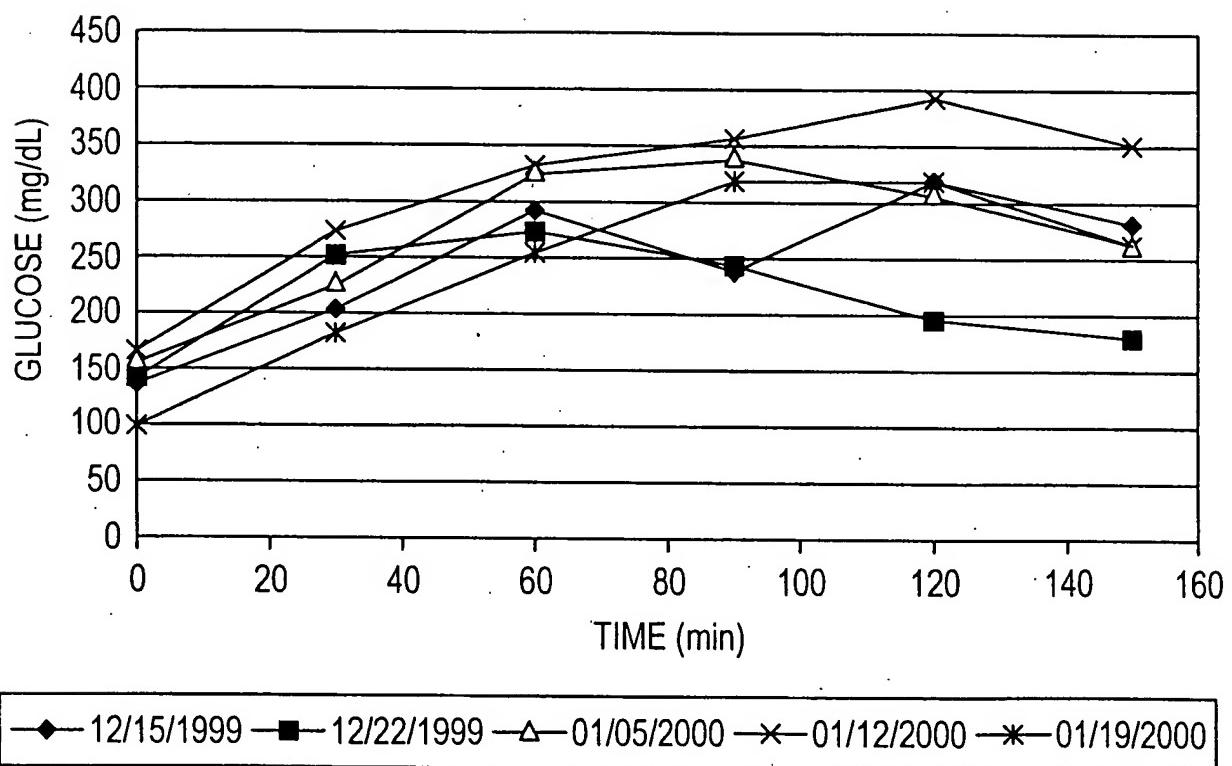


FIG. 13A

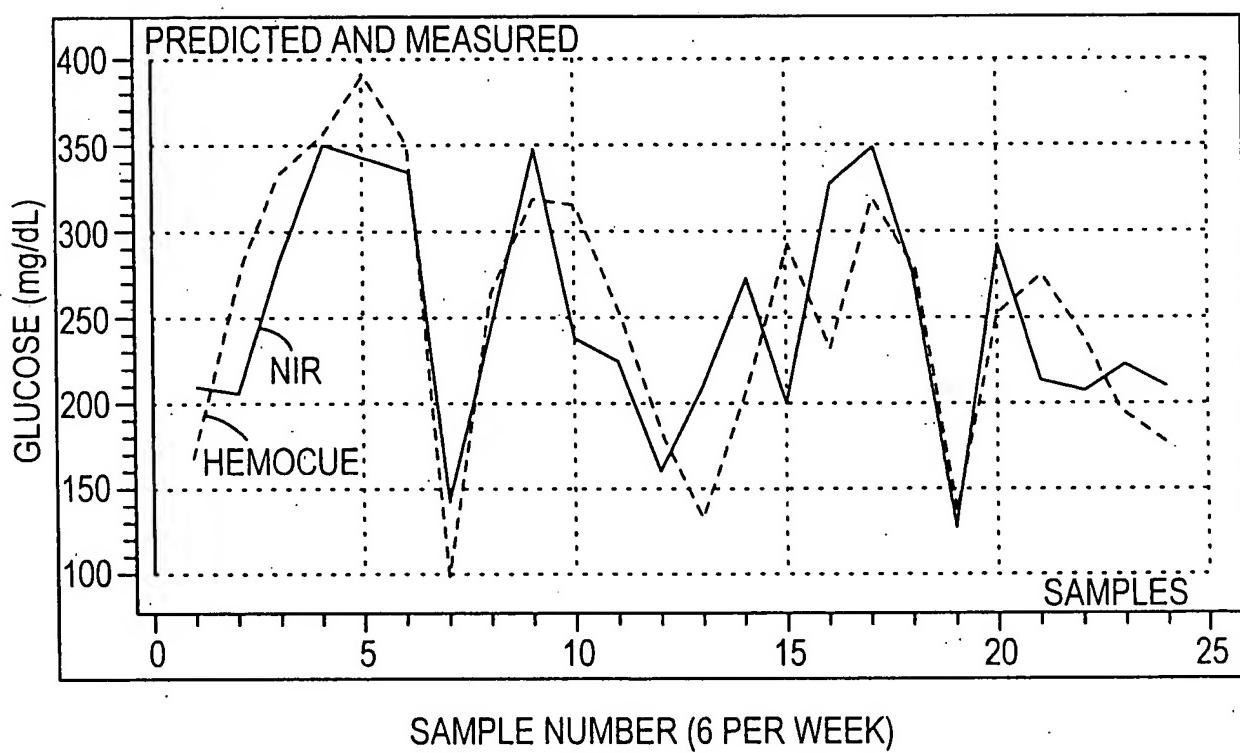


FIG. 13B

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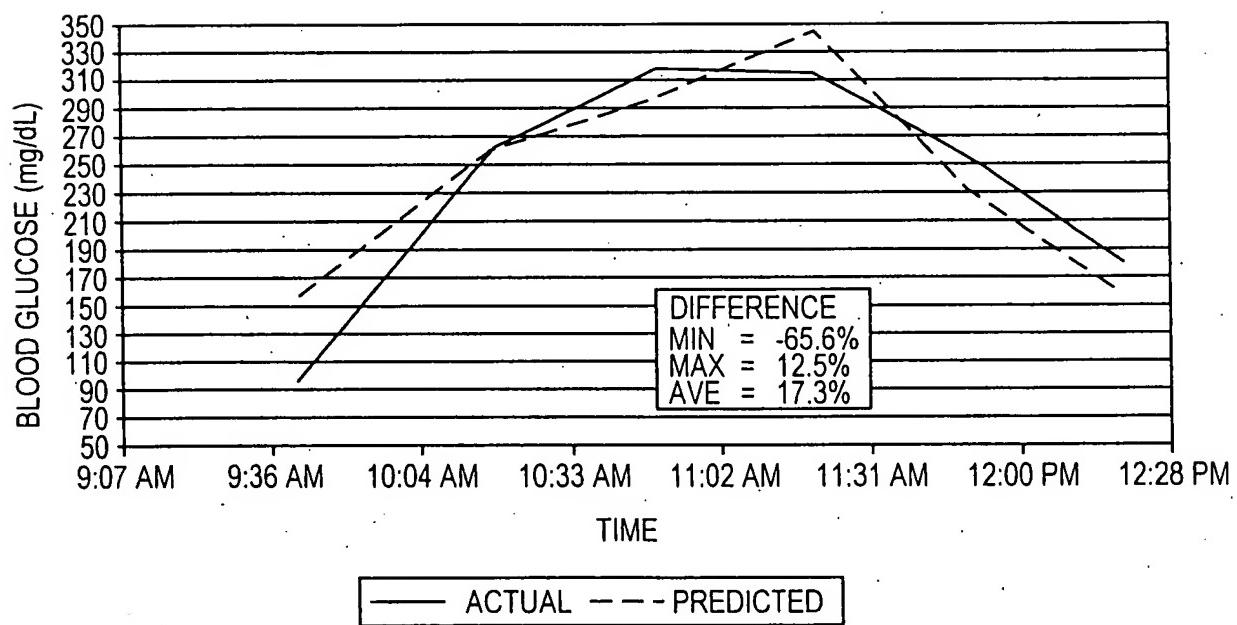


FIG. 13C

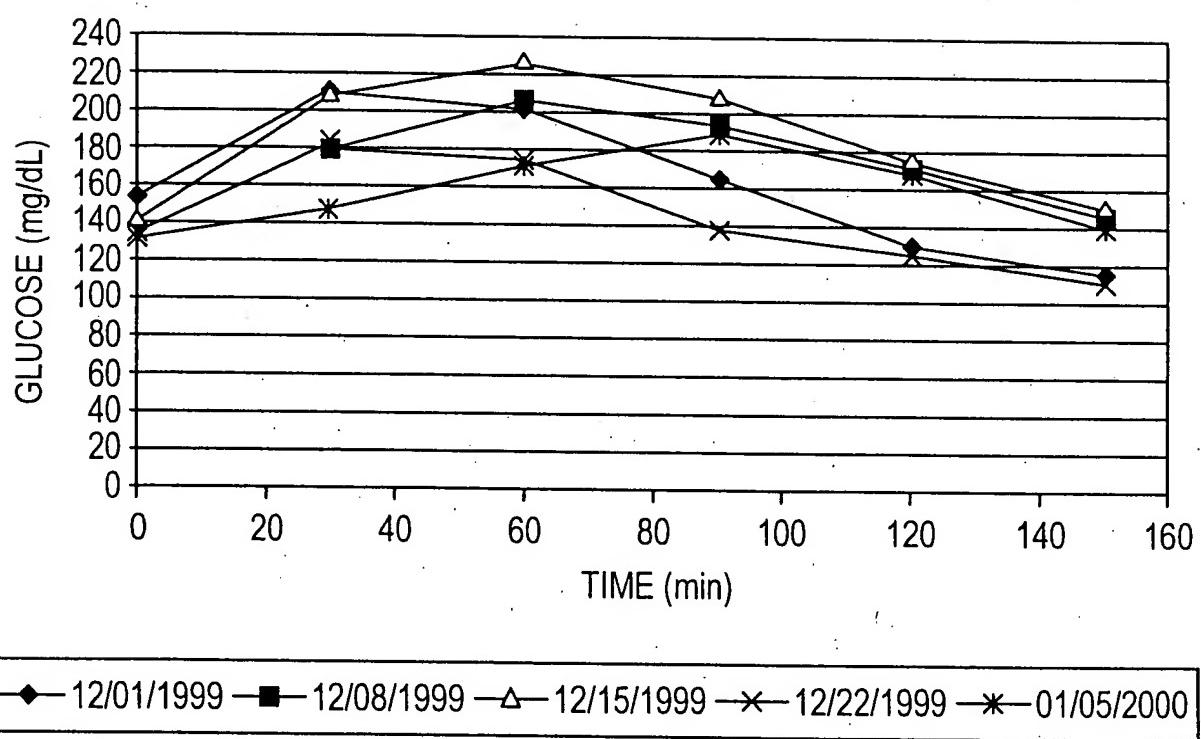


FIG. 14A

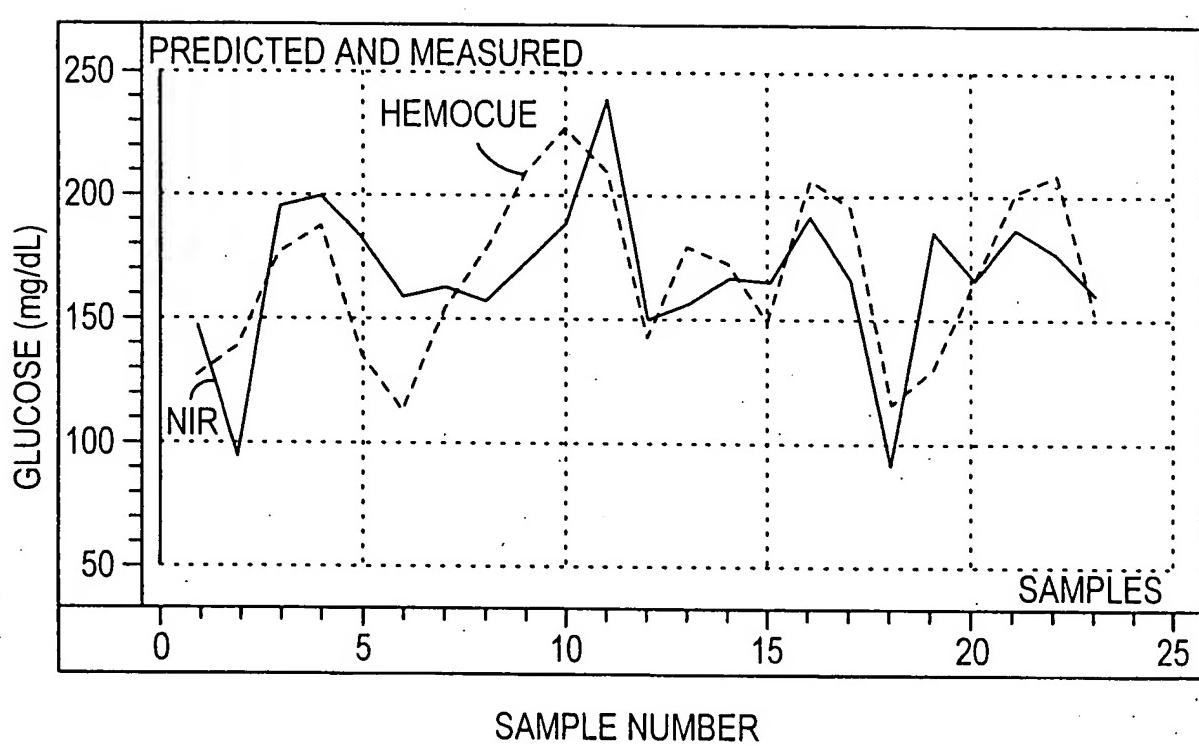


FIG. 14B

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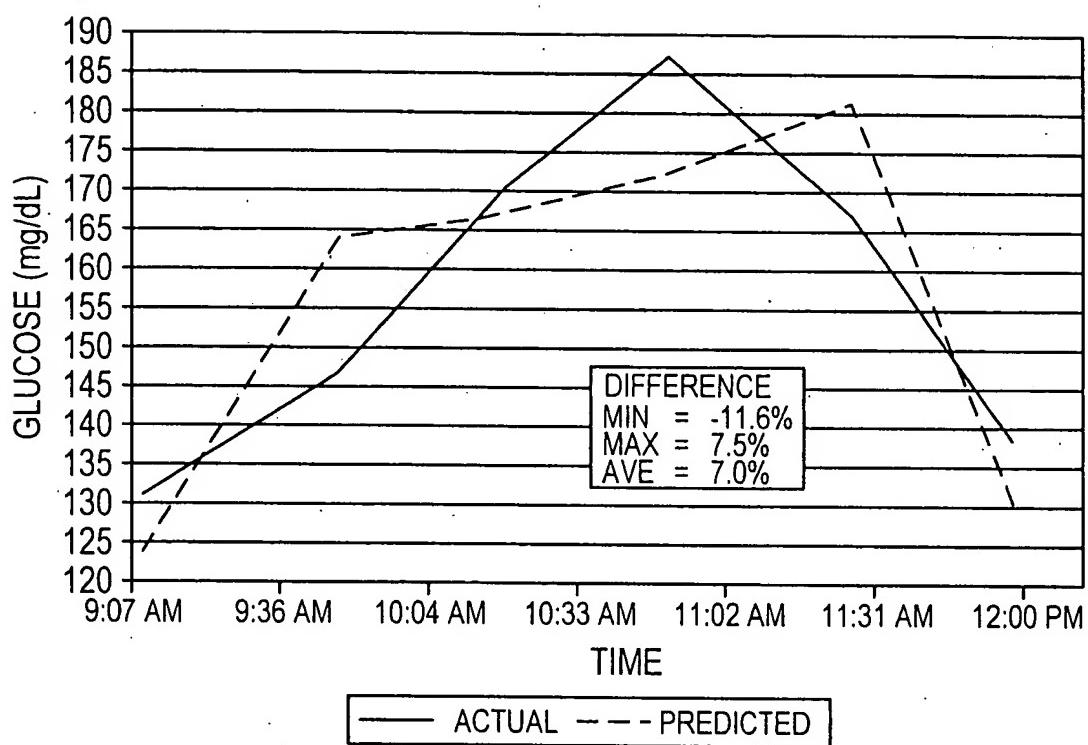


FIG. 14C

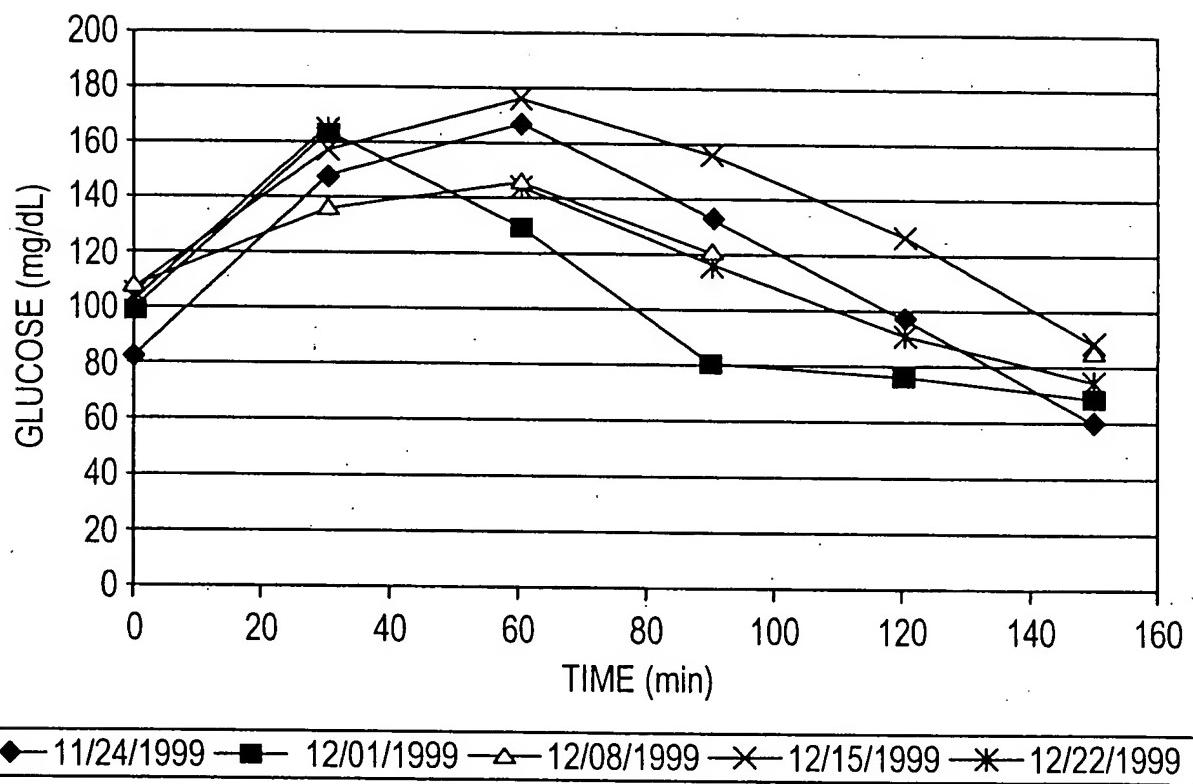


FIG. 15A

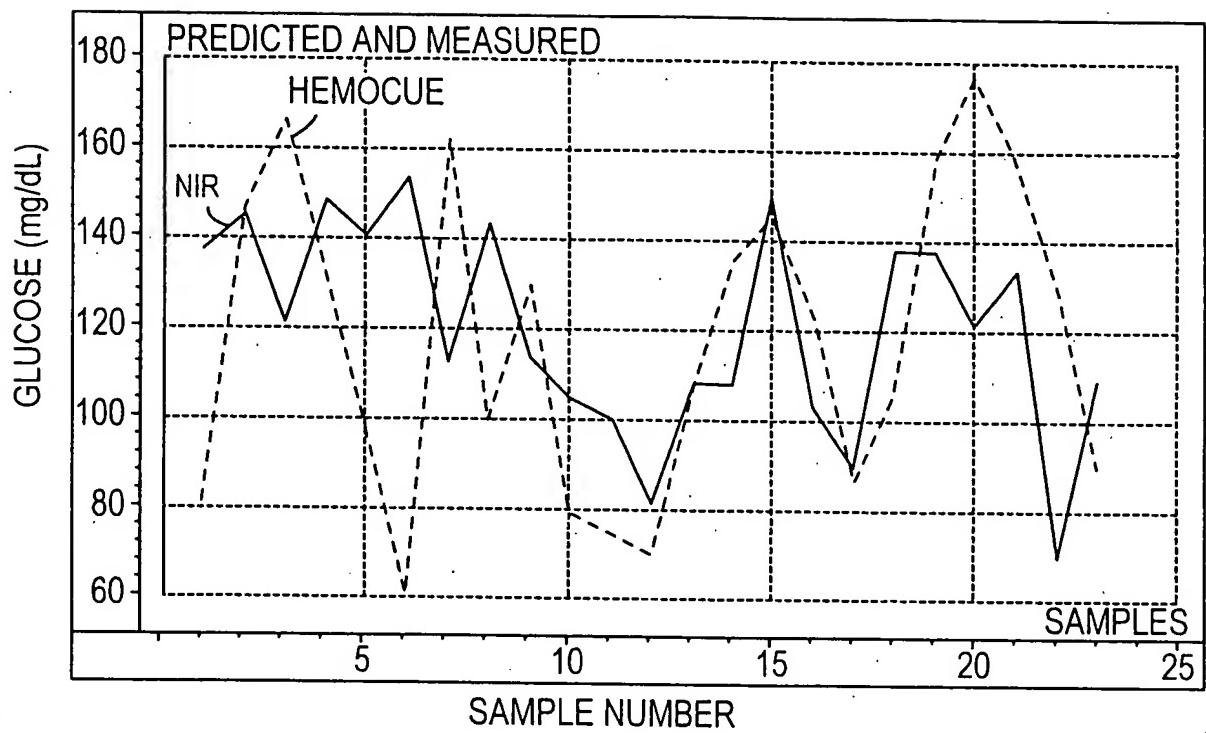


FIG. 15B

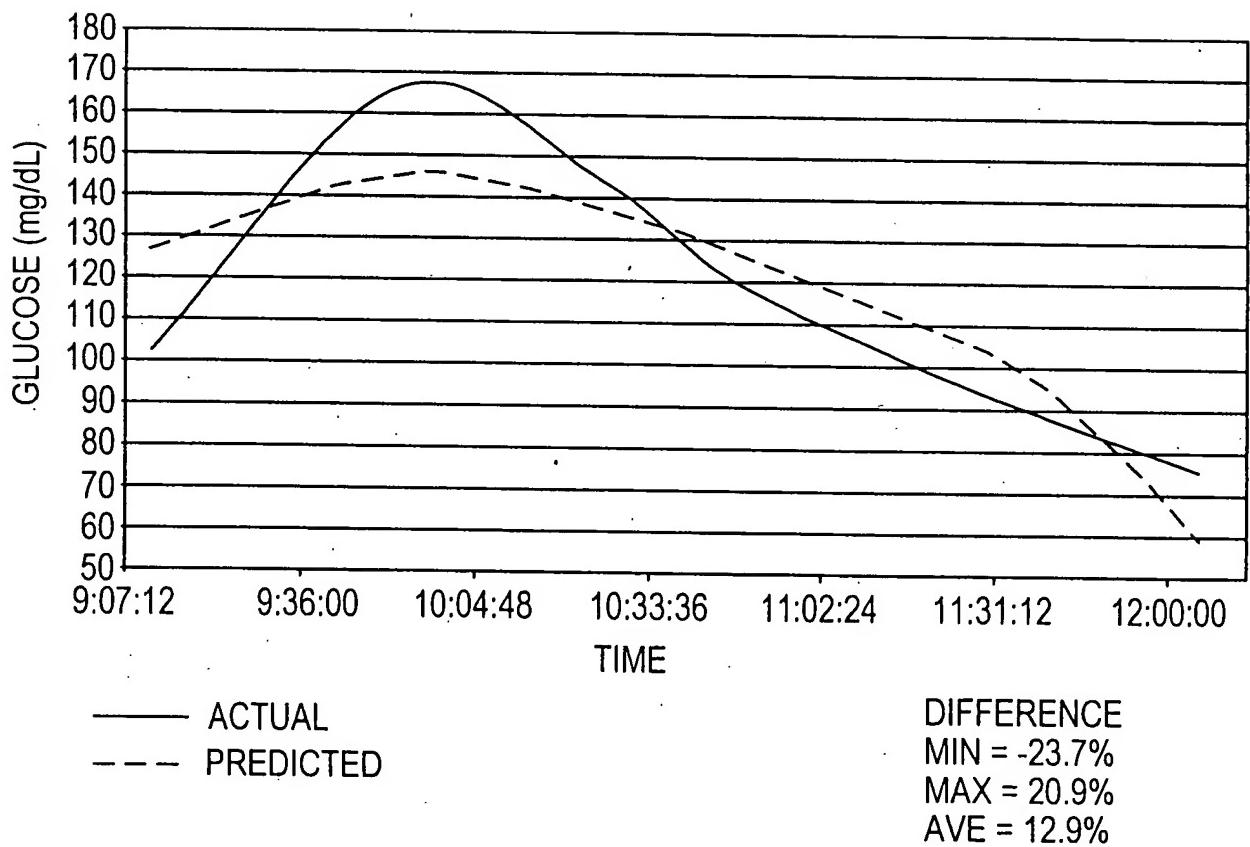


FIG. 15C

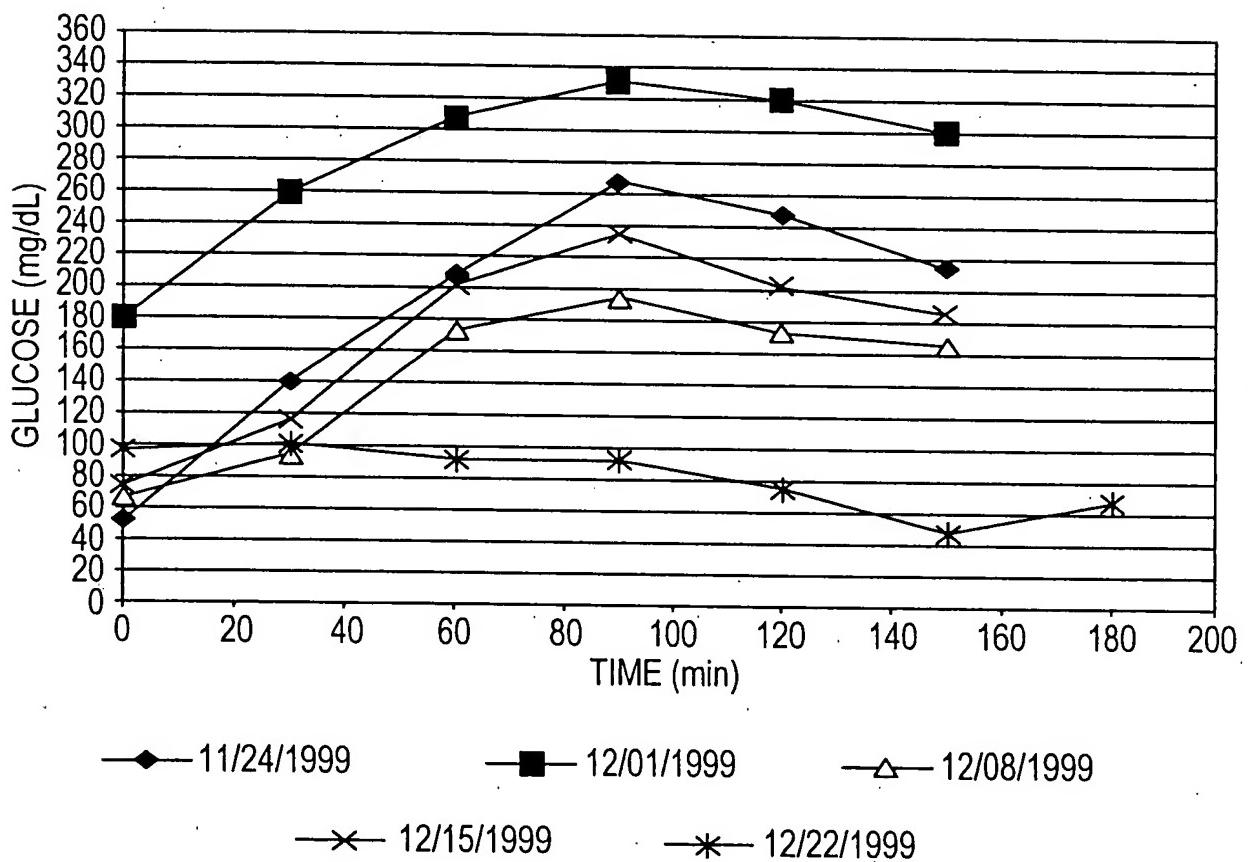


FIG. 16A

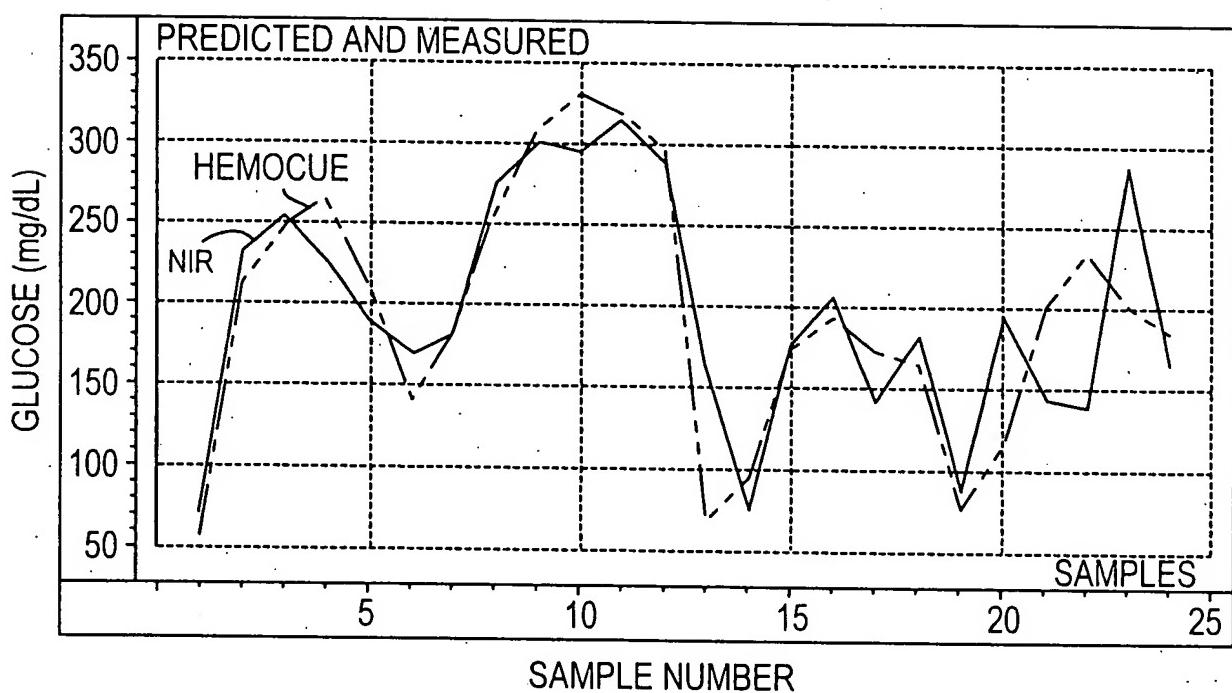


FIG. 16B

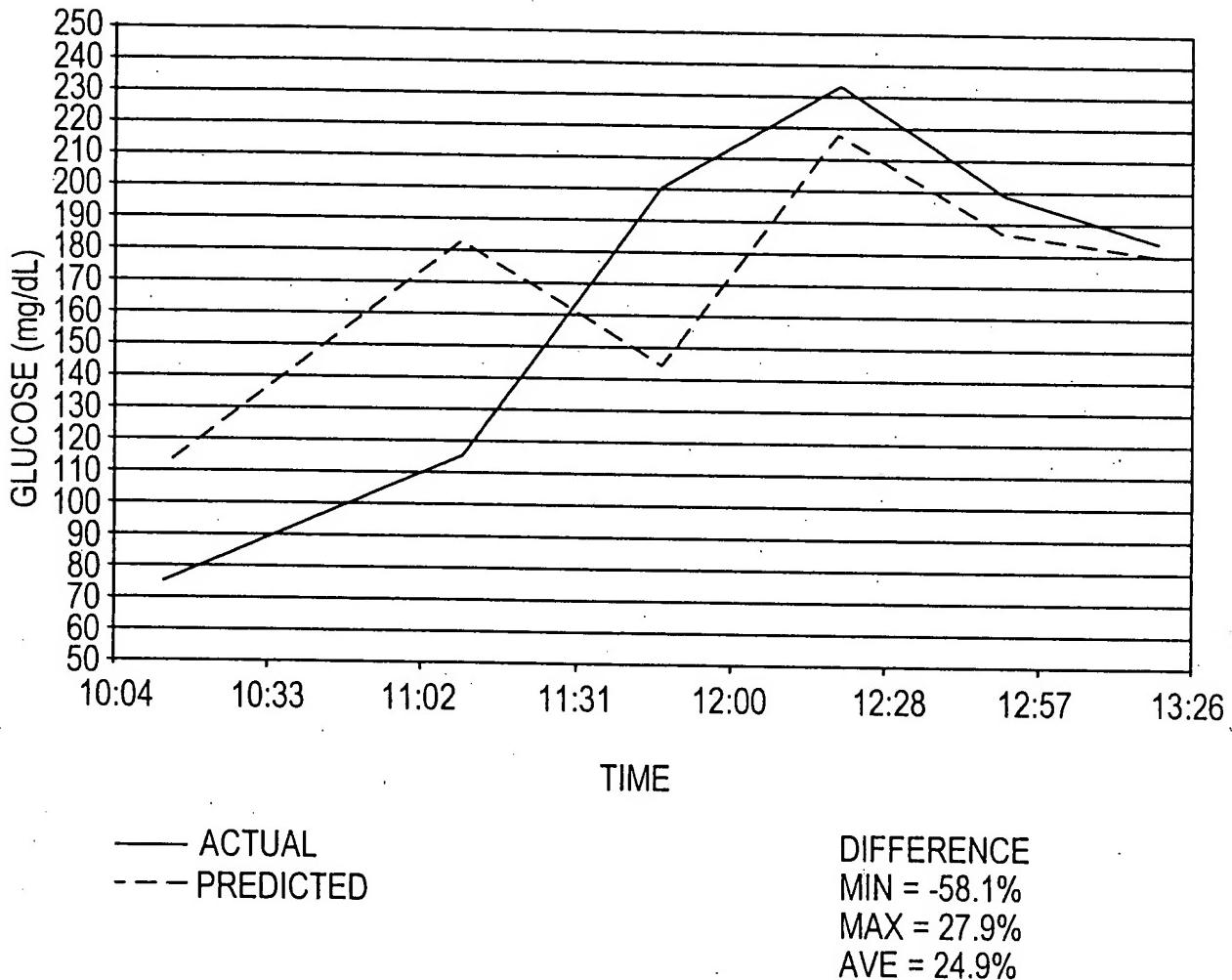


FIG. 16C

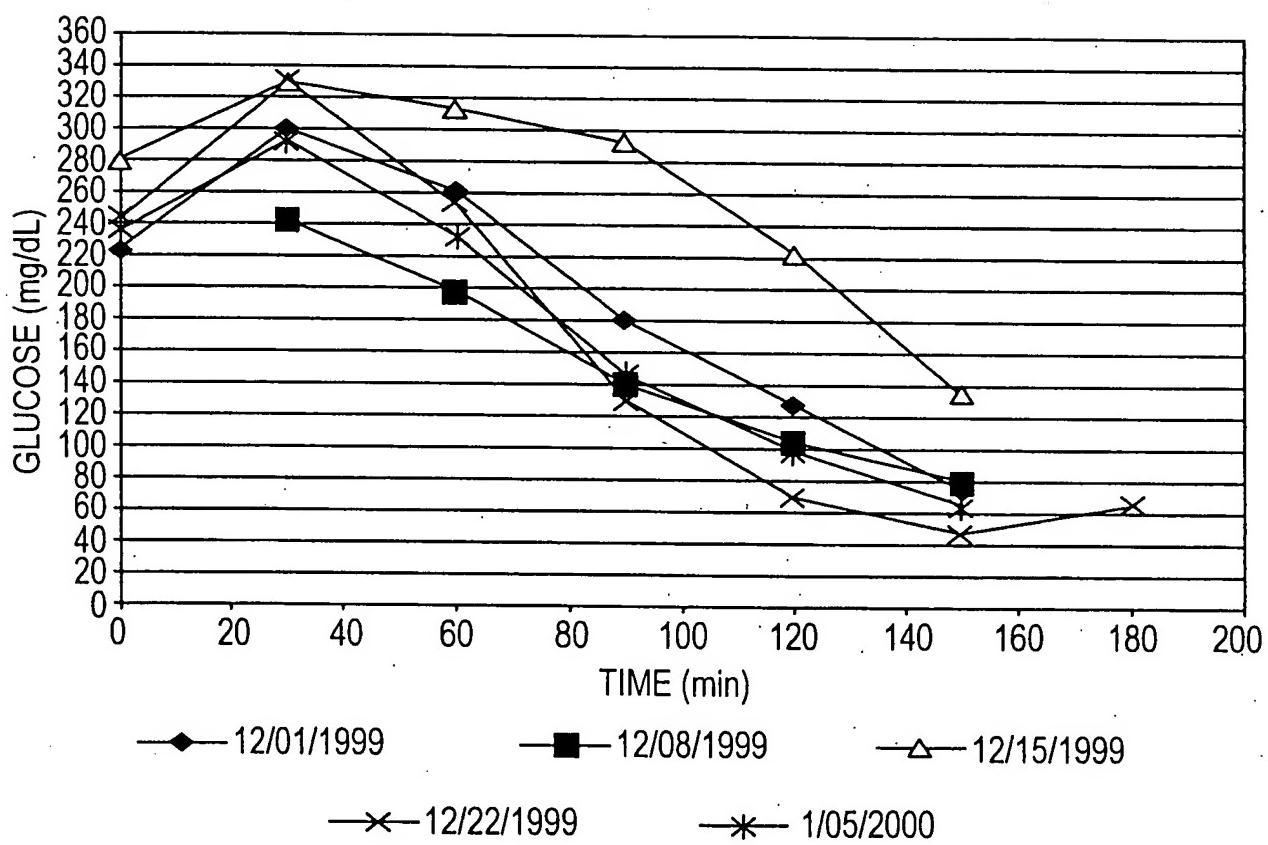


FIG. 17A

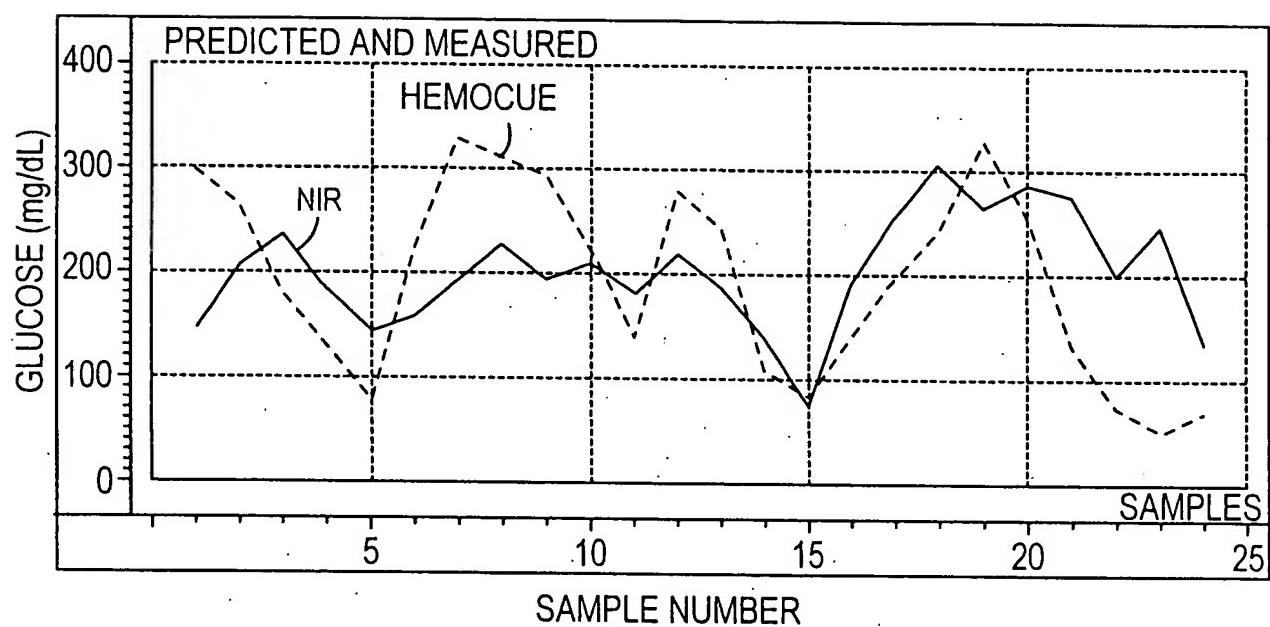


FIG. 17B

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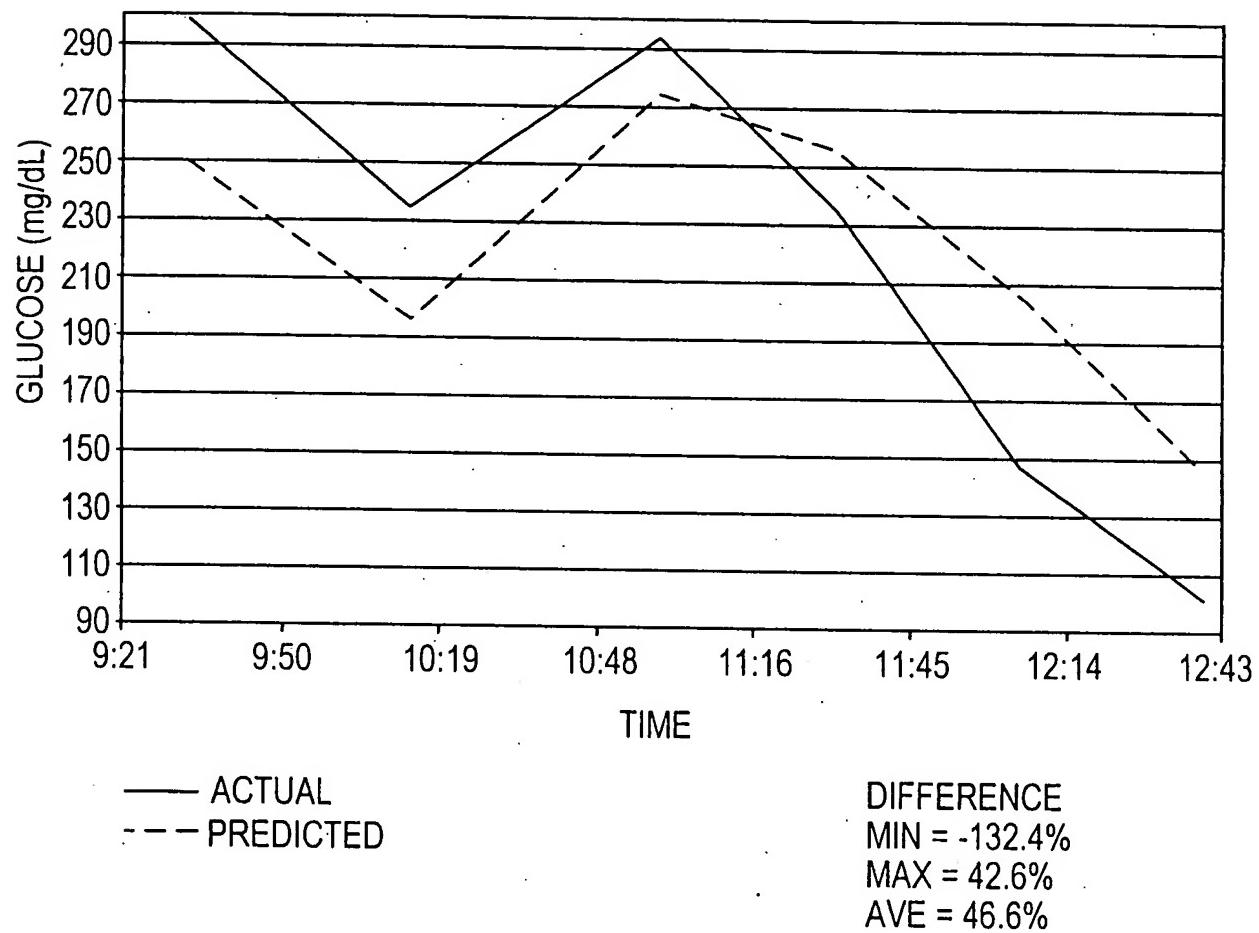


FIG. 17C

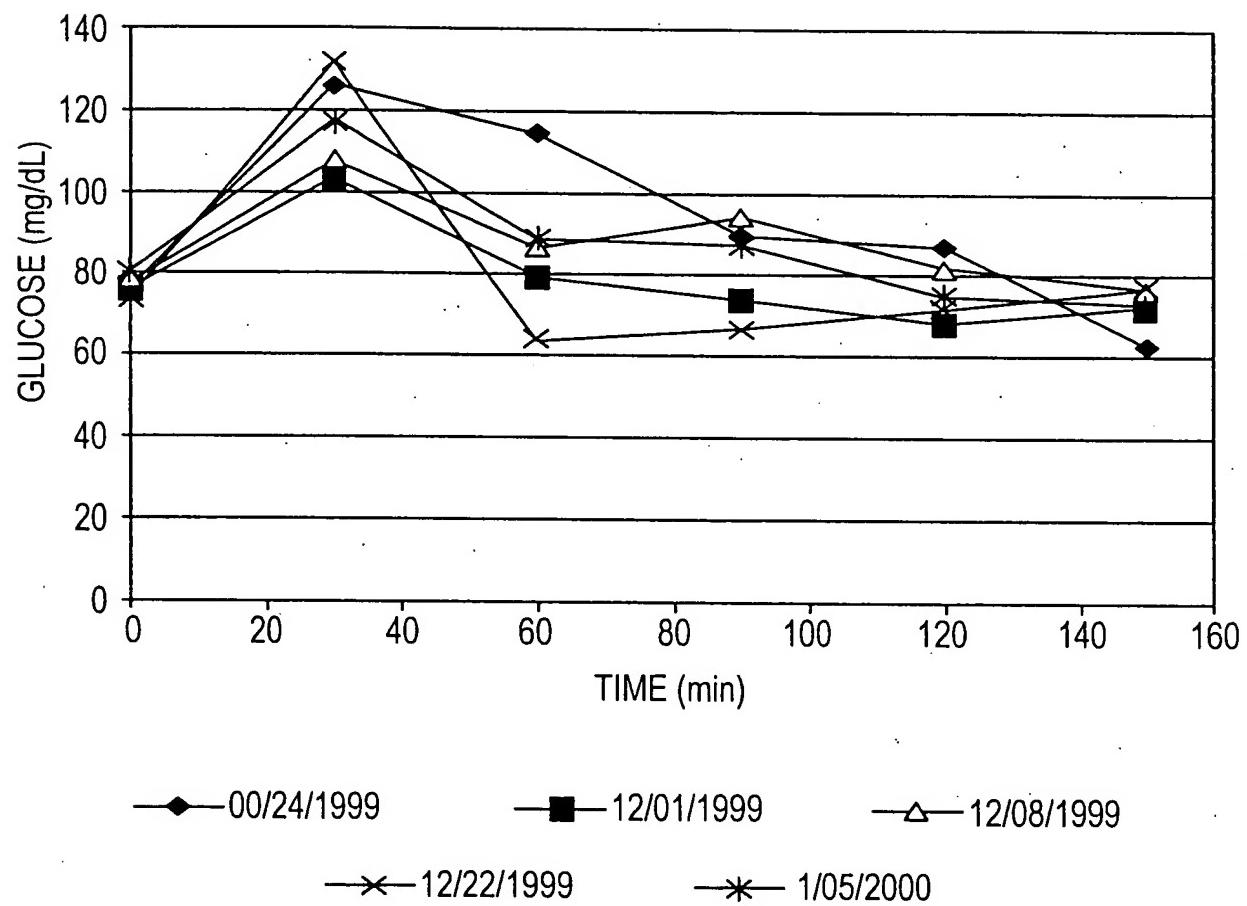


FIG. 18A

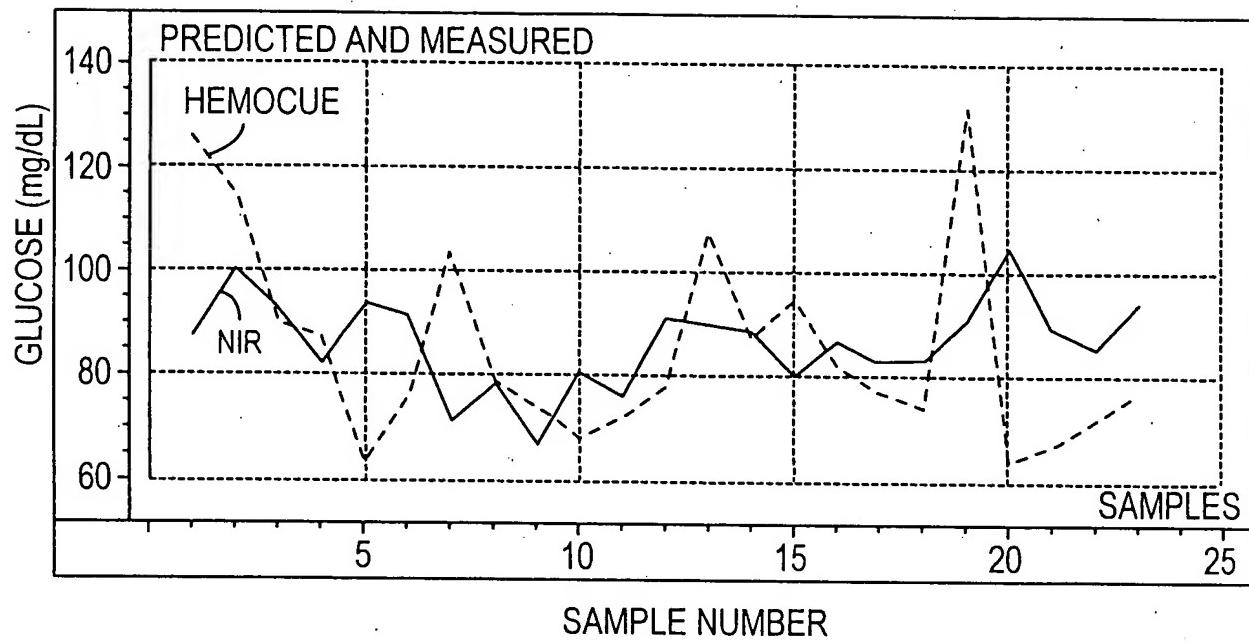


FIG. 18B

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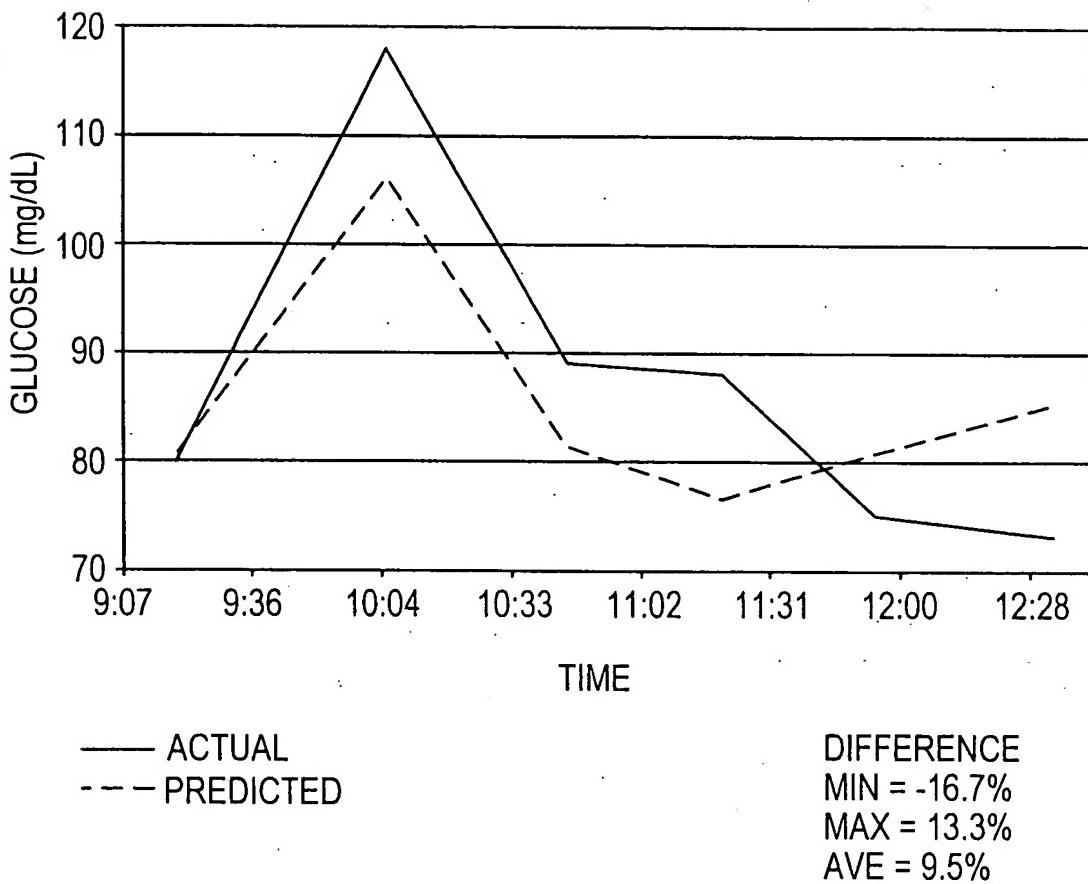


FIG. 18C

## DIFFUSE REFLECTANCE TRANSFORMS

## SECOND TRANSFORM:

	N	B	N	F	S	M	K	S	R	M	S	S	A
	U	A	O	I	E	U	U	M	A	E	G	G	B
	L	S	R	R	C	L	B	O	T	A	D	D	S
	L	E	M	S	N	T	L	O	I	N	E	E	2
	S	C	A	T	D	S	M	T	O	C	R	R	R
	O	L	D	D	C	M	H			N	I	I	E
1ST TRANSFORM	R	I	R	R	A	N	N			T	V	V	F
	R	Z	V	V	T	K	G			R	1	2	L

NULLS	1	1	1	1	1	1	1	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	1	1	0	0	1	1	1
KUBLMUNK	0	1	1	1	1	1	0	1	0	0	1	1	0
SMOOTHNG	0	1	1	1	1	1	1	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 19A

## DIFFUSE REFLECTANCE RATIOS

## DENOMINATOR TRANSFORM

	N	B	N	F	S	M	K	S	R	M	S	G	A
	U	A	O	I	E	U	B	M	O	E	D	D	B
	L	S	R	R	C	L	L	O	T	A	E	E	S
	L	E	M	S	N	T	S	M	U	H	N	C	R
	S	C	O	A	T	D	C	U	N	N	R	I	V
NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0	0
KUBLMUNK	0	1	0	0	0	0	1	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	0	1	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	0	1
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 19B

## DIFFUSE TRANSMITTANCE TRANSFORMS

## SECOND TRANSFORM:

	N	B	N	F	S	M	K	S	R	M	S	S	A
	U	A	O	I	E	M	U	M	A	E	G	G	B
	L	S	R	R	C	L	B	O	T	A	D	D	S
	L	E	M	S	N	T	L	O	I	N	E	E	2
	S	C	A	T	D	S	M	T	O	C	R	R	R
	O	L	D	D	C	M	U	H	N	N	I	I	E
1ST TRANSFORM	R	I	R	R	A	N	N	N	T	V	V	V	F
	R	Z	V	V	T	K	G		R	1	2	L	

NULLS	1	1	1	1	1	1	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	0	1	0	0	1	1	1
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	1	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 20A

## DIFFUSE TRANSMITTANCE RATIOS

## DENOMINATOR TRANSFORM

N	B	N	F	S	M	K	S	R	M	S	S	A
U	A	O	I	E	U	U	M	A	E	G	G	B
L	S	R	R	C	L	B	O	T	A	D	D	S
L	E	M	S	N	T	L	O	I	N	E	E	2
S	C	A	T	D	S	M	T	O	C	R	R	R
	O	L	D	D	C	M	H	N	N	I	I	E
NUMERATOR	R	I	R	R	A	N	N	T	V	V	F	F
TRANSFORM	R	Z	V	V	T	K	G	R	1	2	L	

NULLS	1	1	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	1

FIG. 20B

## CLEAR TRANSMITTANCE TRANSFORMS

## SECOND TRANSFORM:

	N	B	N	F	S	M	K	S	R	M	S	S	A
	U	A	O	I	E	M	U	M	A	E	G	G	B
	L	S	R	R	C	L	B	O	T	A	D	D	S
	L	E	M	S	N	T	L	O	I	N	E	E	2
	S	C	A	T	D	S	M	T	O	C	R	R	R
	O	L	D	D	C	M	U	H	N	T	I	V	E
1ST TRANSFORM	R	R	I	R	R	A	N	N	T	V	V	F	L
	R	Z	V	V	T	K	G		R	1	2		

NULLS	1	1	1	1	1	0	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	0	1	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	0	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	0	0	1	0	0	1	1	0

FIG. 21A

## CLEAR TRANSMITTANCE RATIOS

## DENOMINATOR TRANSFORM

	N	B	N	F	S	M	K	S	R	M	S	S	A
	U	A	O	I	E	U	U	M	A	E	G	G	B
	L	S	R	R	C	L	B	O	T	A	D	D	S
	L	E	M	S	N	T	L	O	I	N	E	E	2
	S	C	A	T	D	S	M	T	O	C	R	R	R
		O	L	D	D	C	M	H	N	I	V	V	E
NUMERATOR	R	I	R	R	A	N	N		T	R	1	2	F
TRANSFORM	R	Z	V	V	T	K	G		R				L

NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 21B

DERIVATIVE SPACING:

SPACING = INT (n ^ 1.4), n = 1 : 10

= 1, 2, 4, 6, 9, 12, 15, 18, 21, 25

FIG. 22

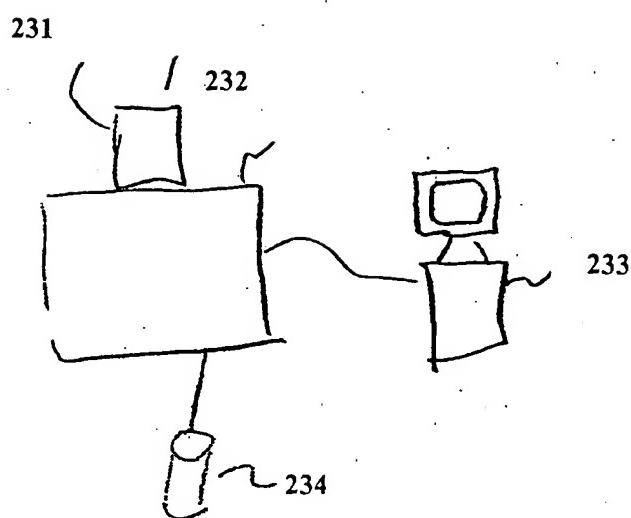
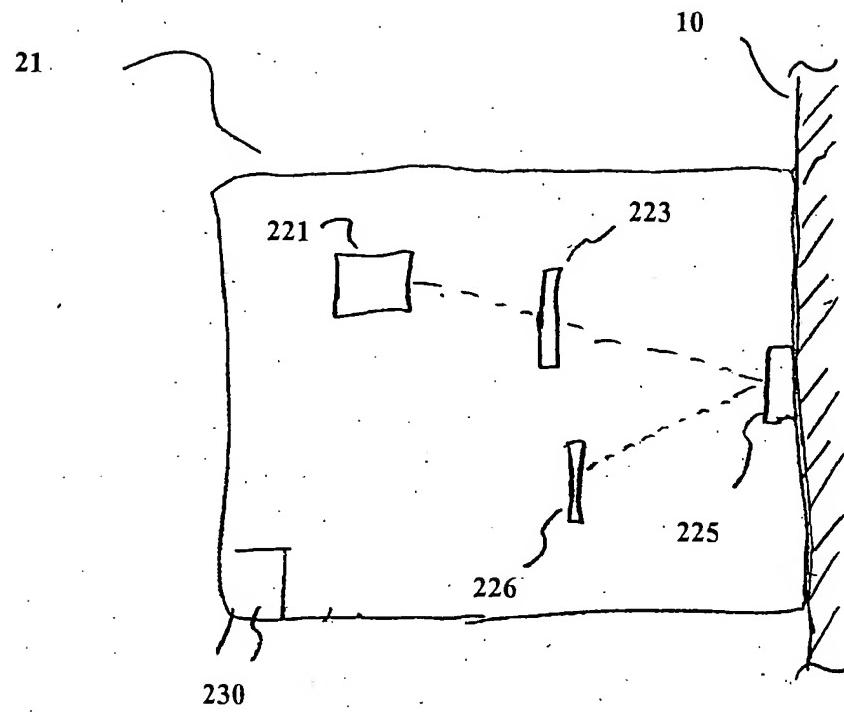


Figure 23A

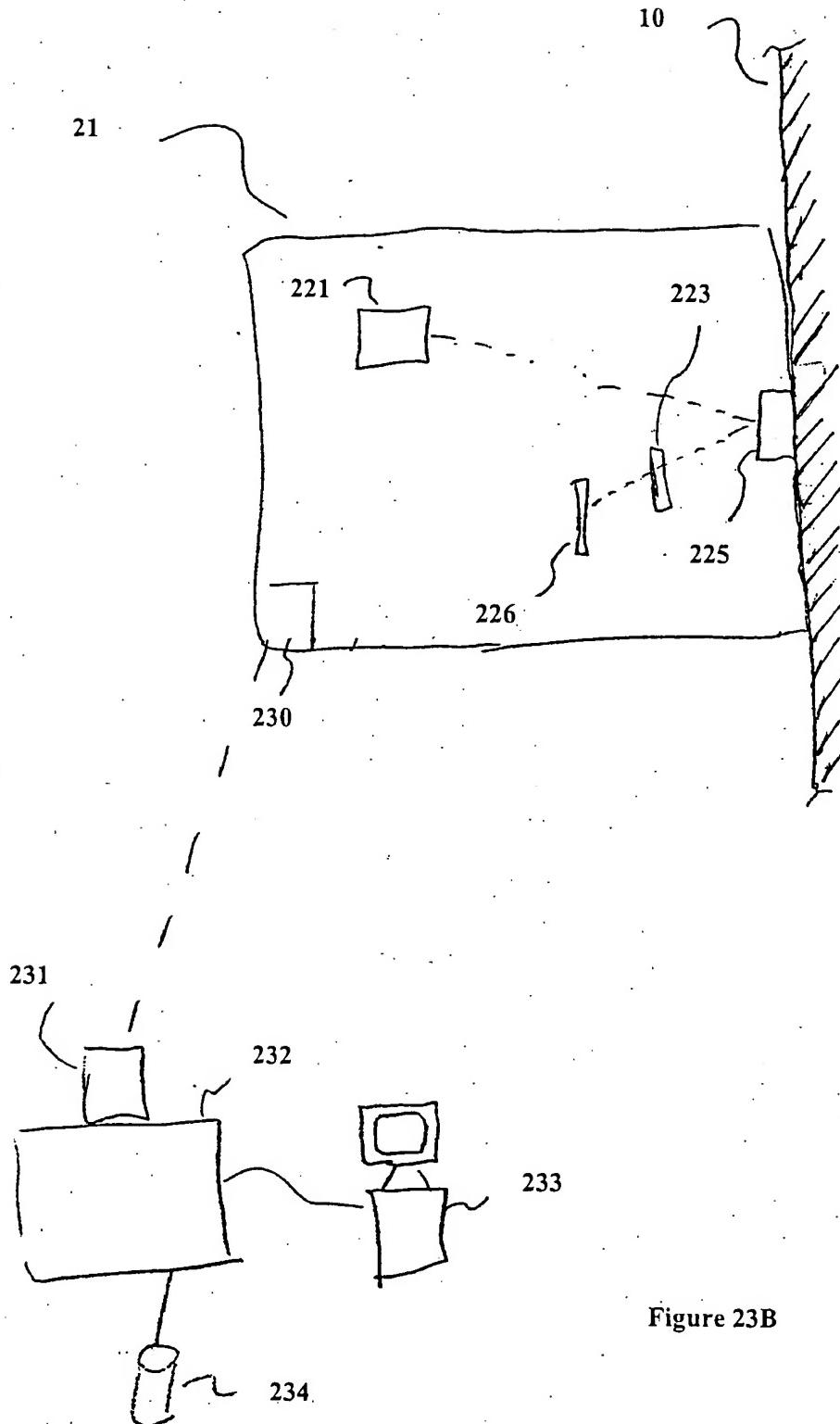


Figure 23B

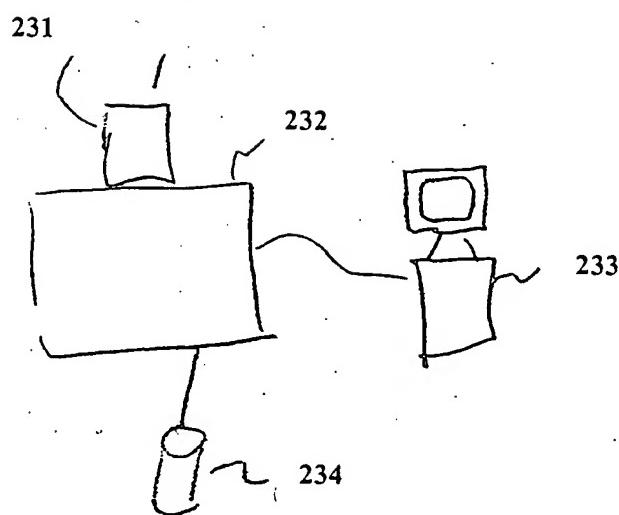
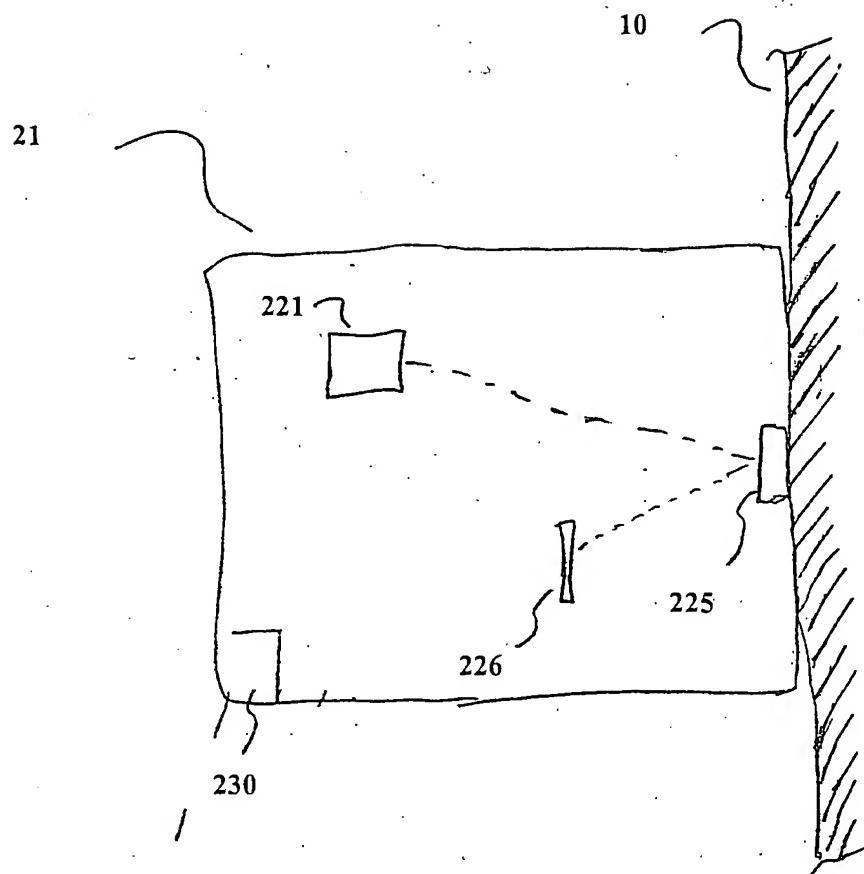


Figure 23C

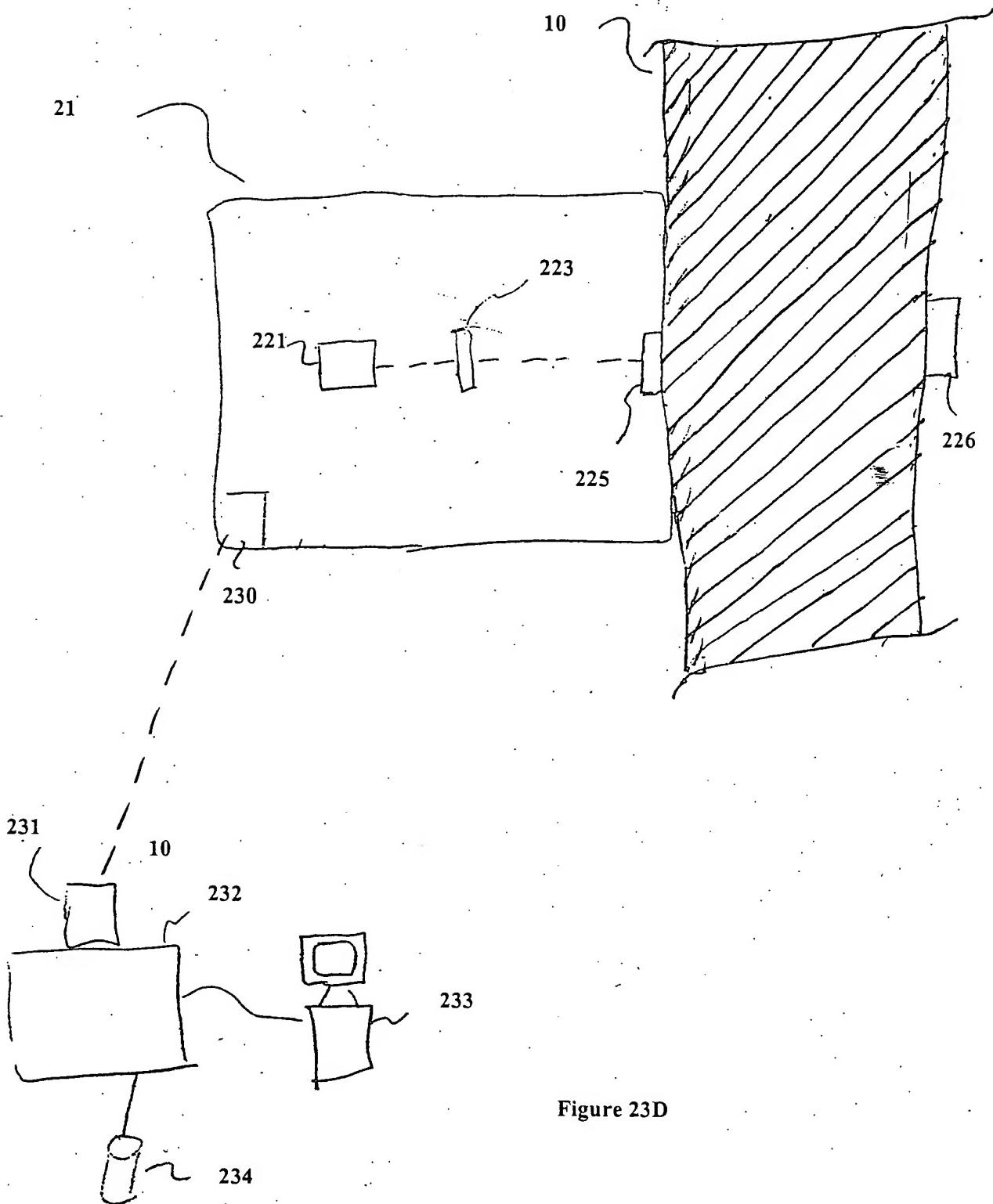


Figure 23D

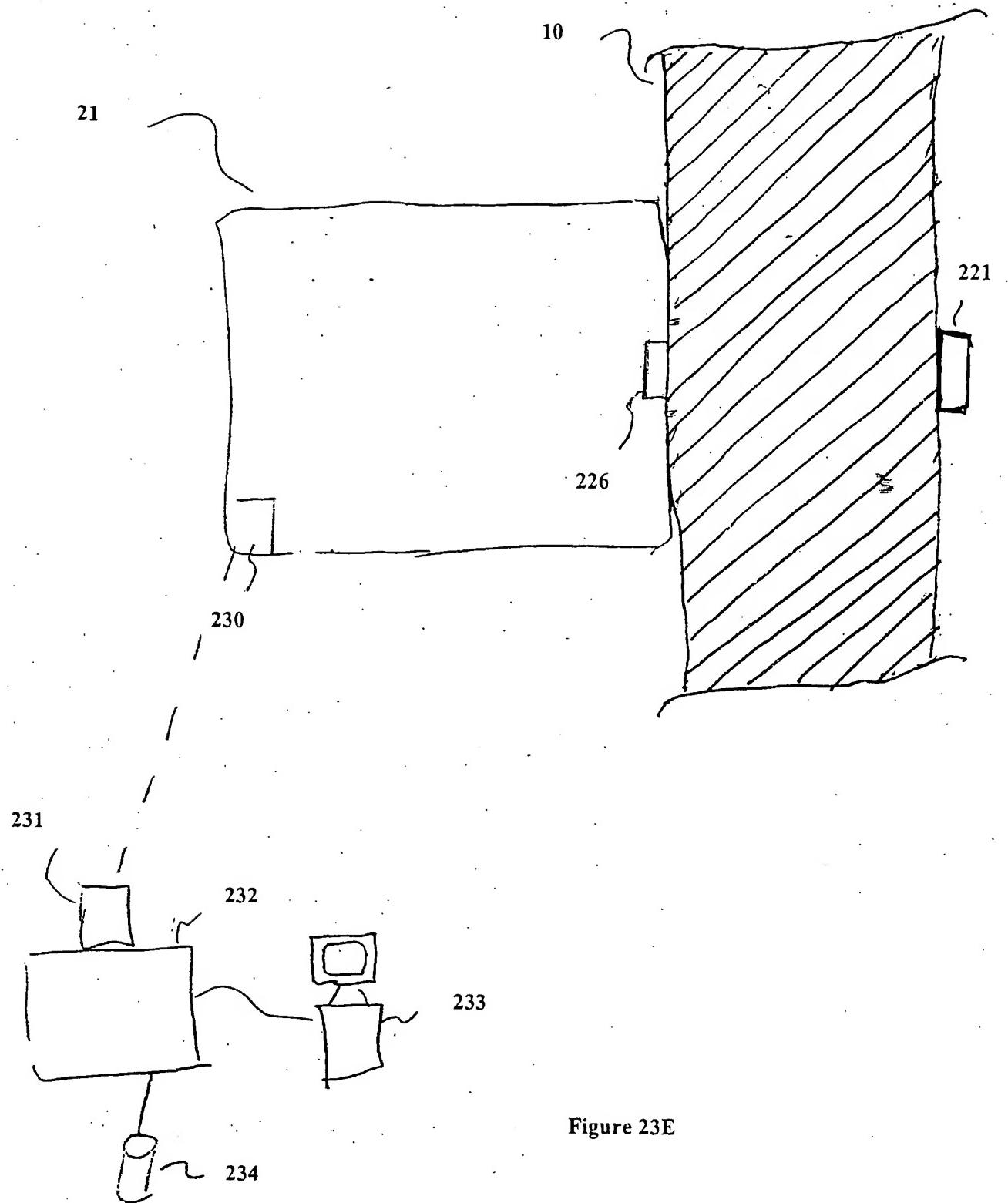


Figure 23E

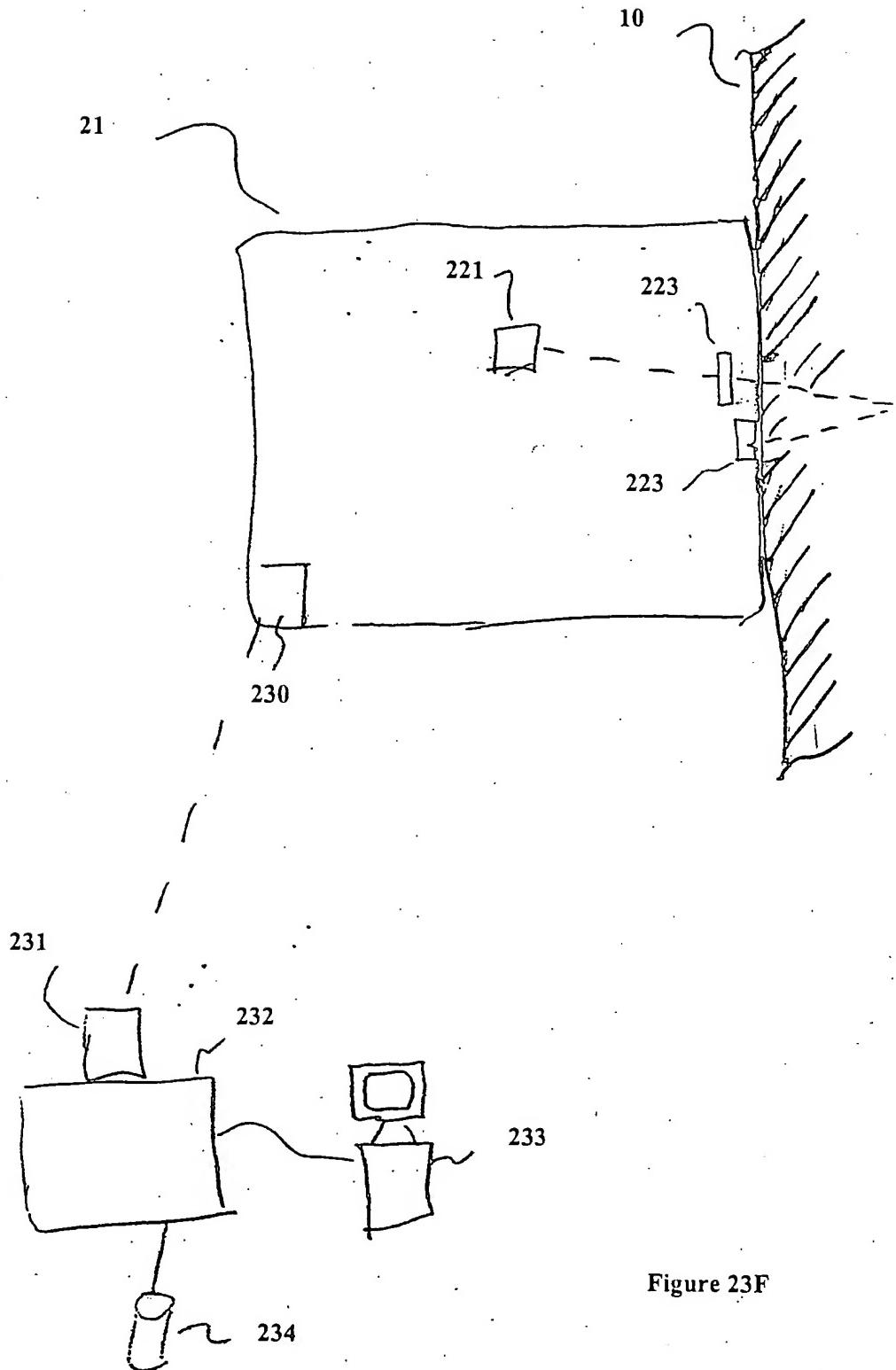


Figure 23F

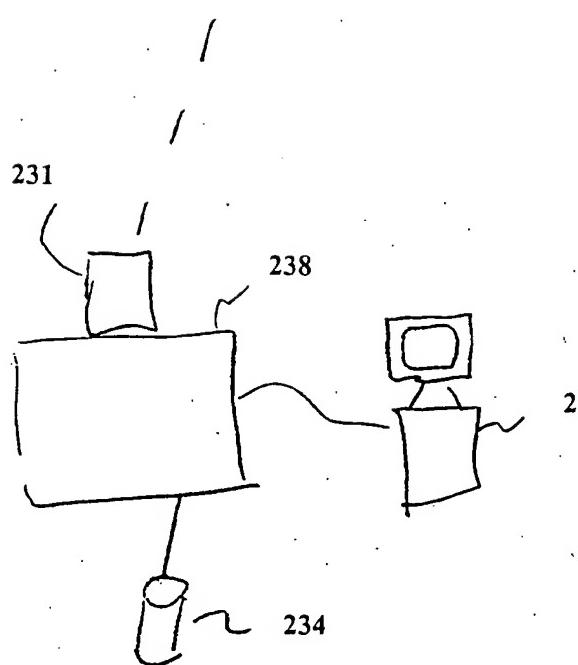
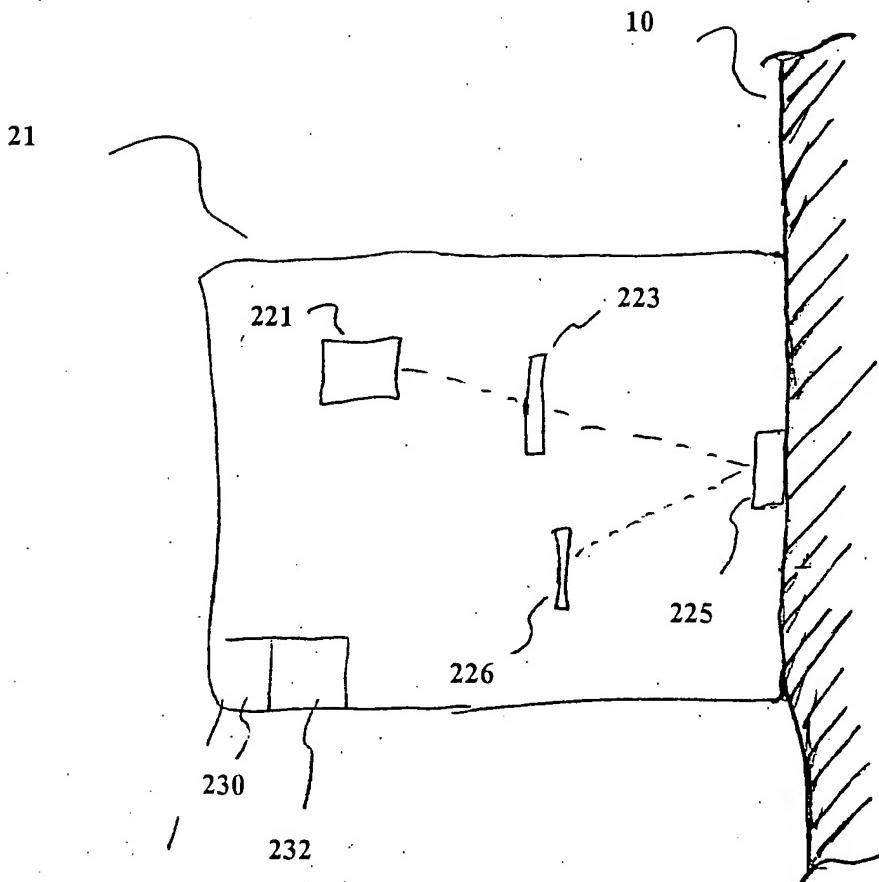


Figure 23G

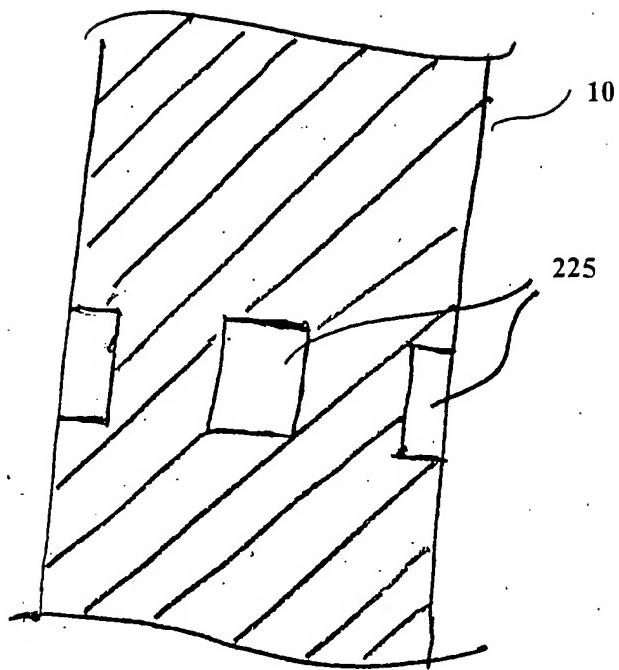


Figure 24

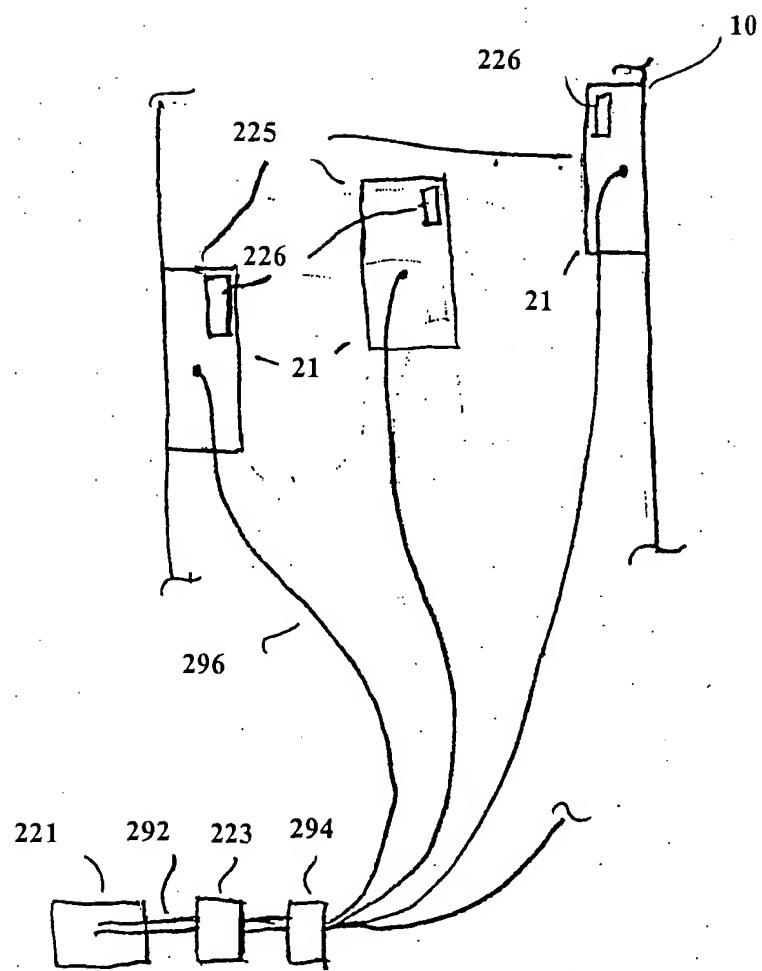
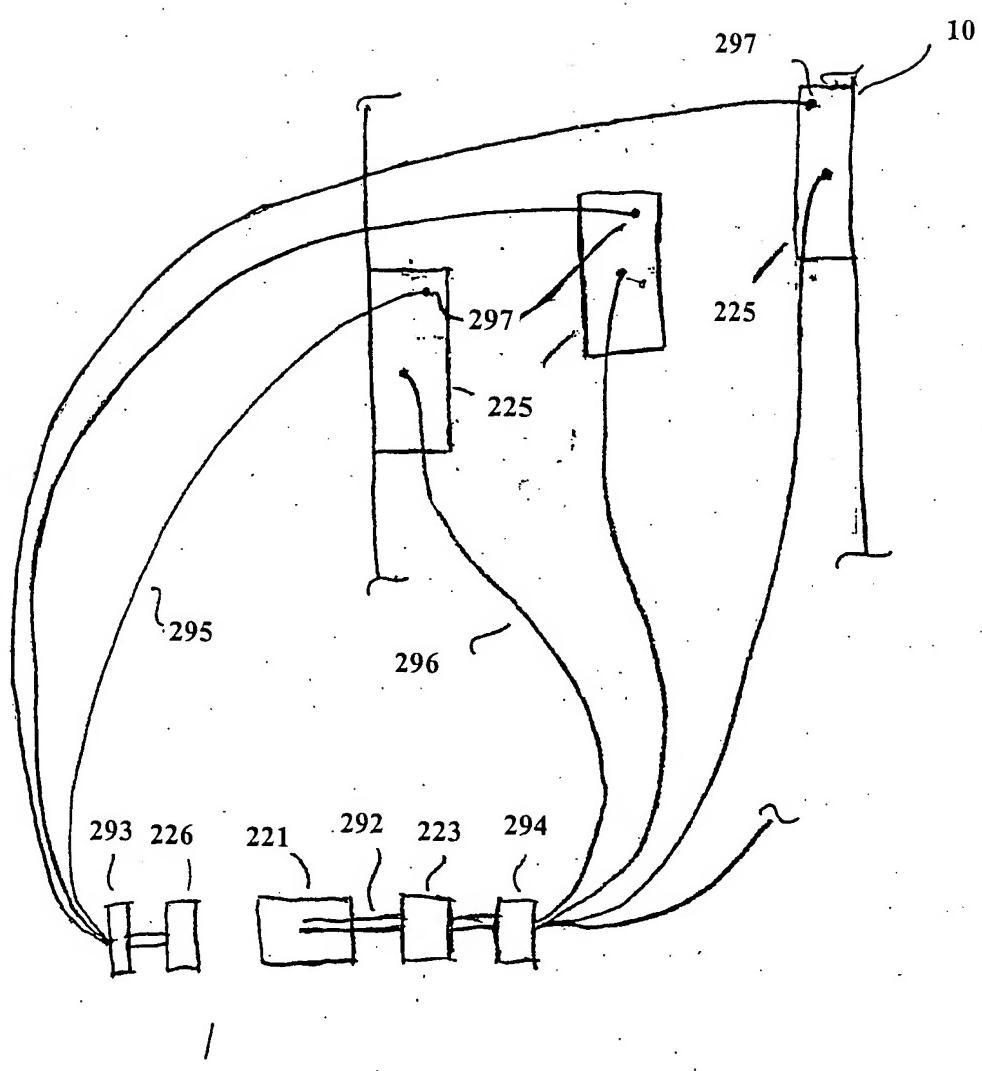


Figure 25



21

Figure 26

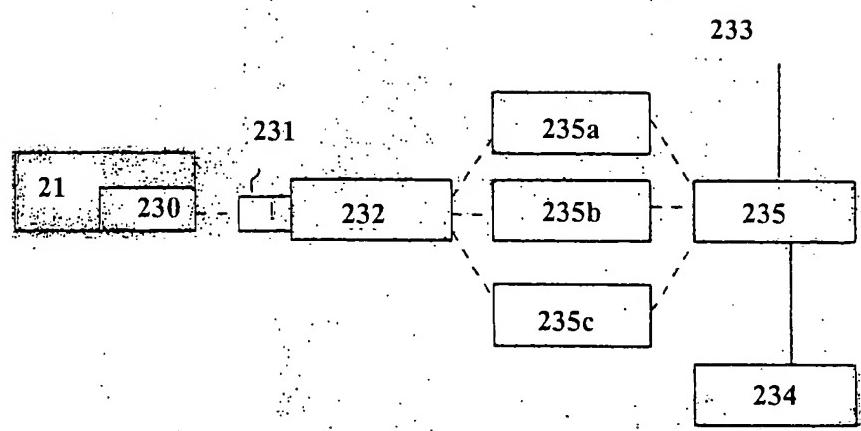


Figure 27

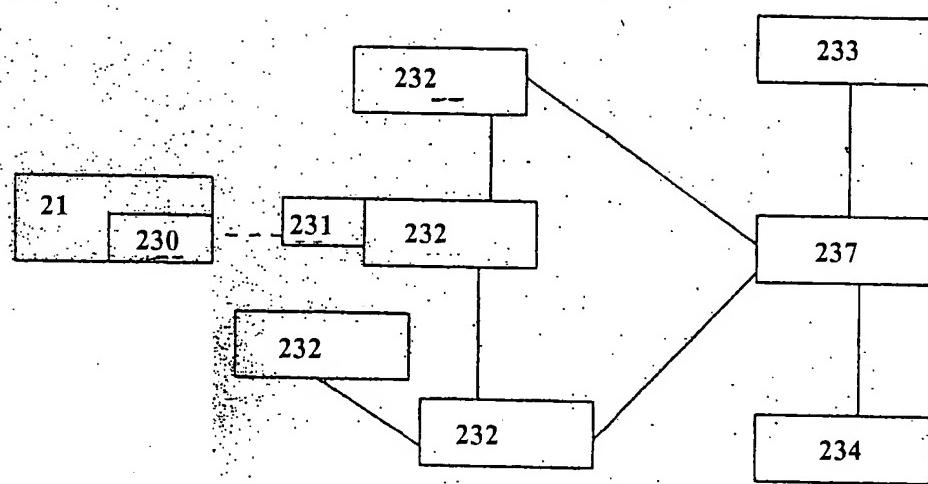


Figure 28

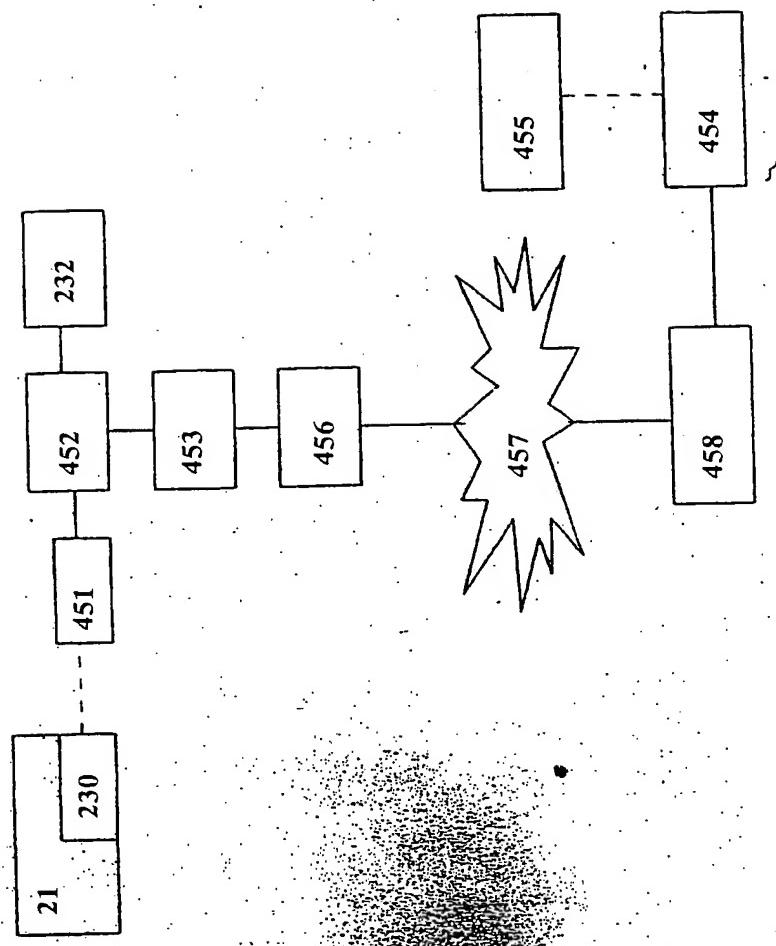


Figure 29

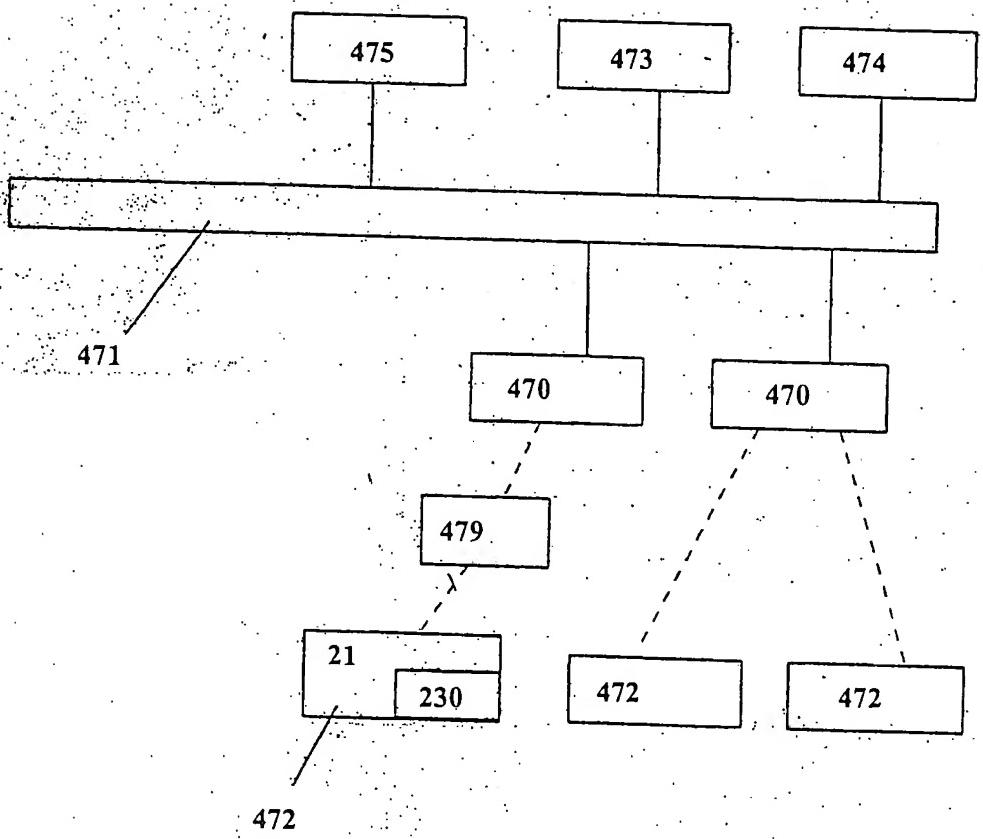


Figure 30

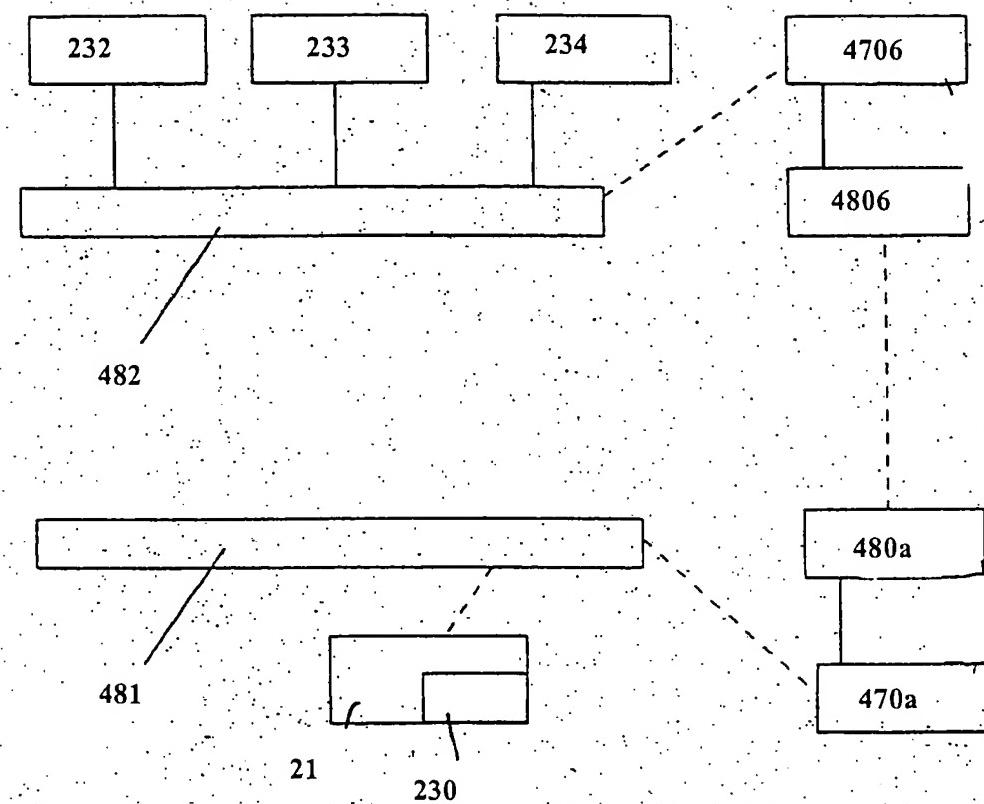


Figure 31

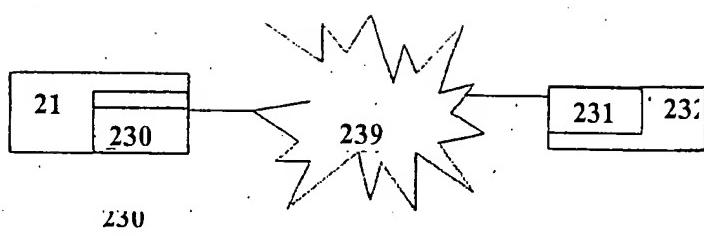


Figure 32

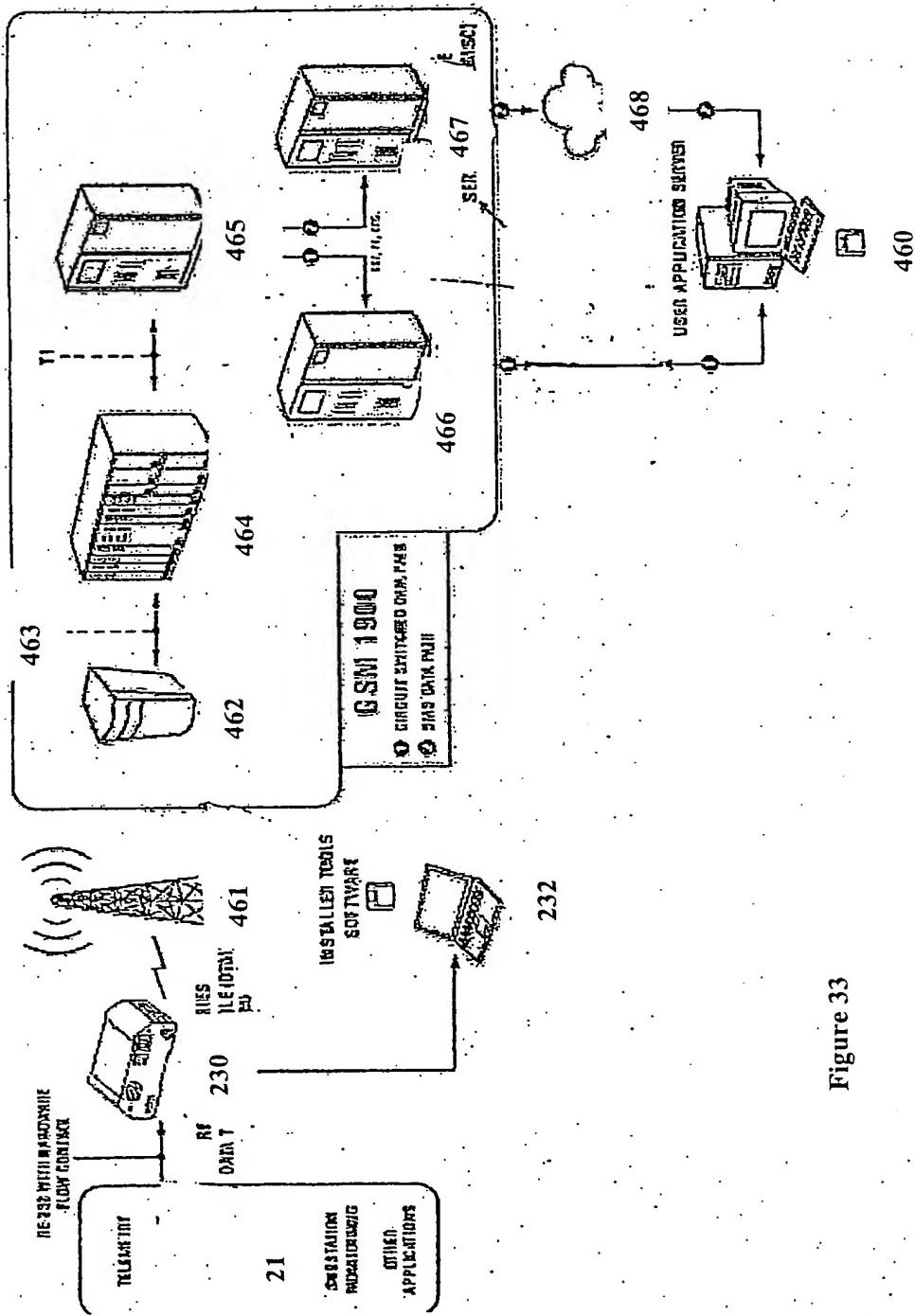


Figure 33

Figure 34A

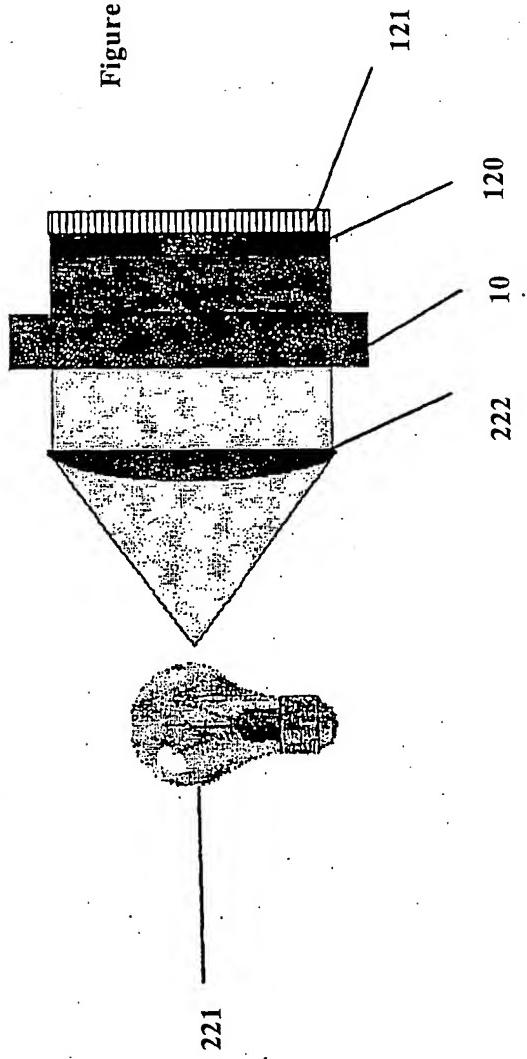


Figure 34B

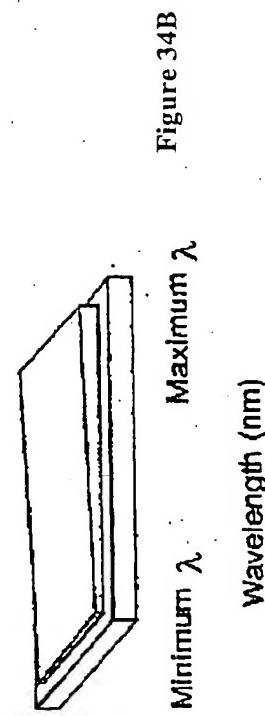


Fig. 35A

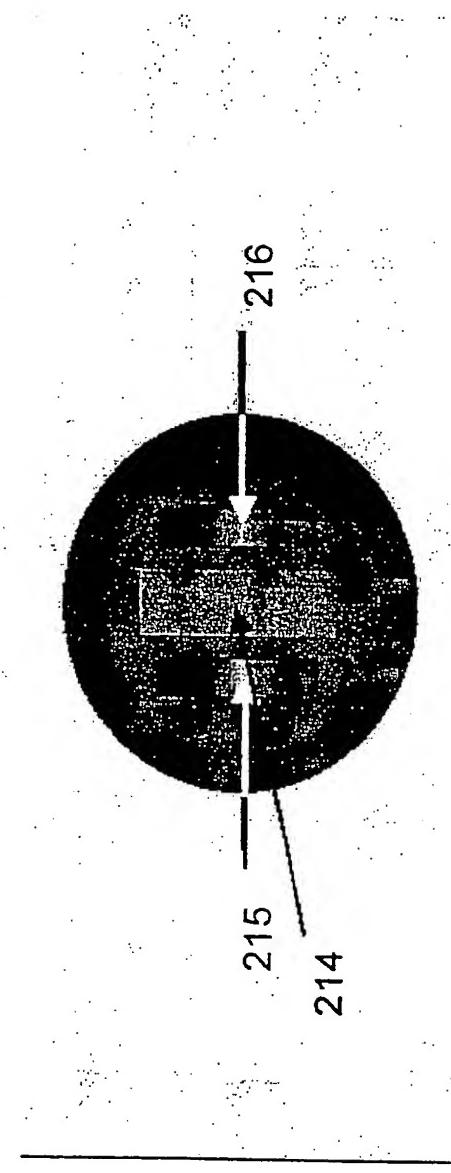


Fig. 35B

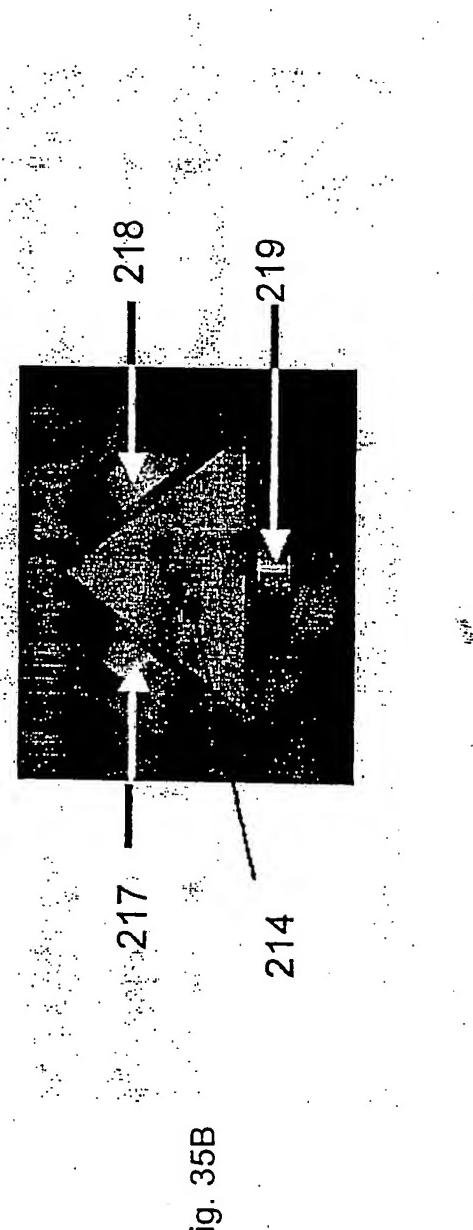


Figure 36

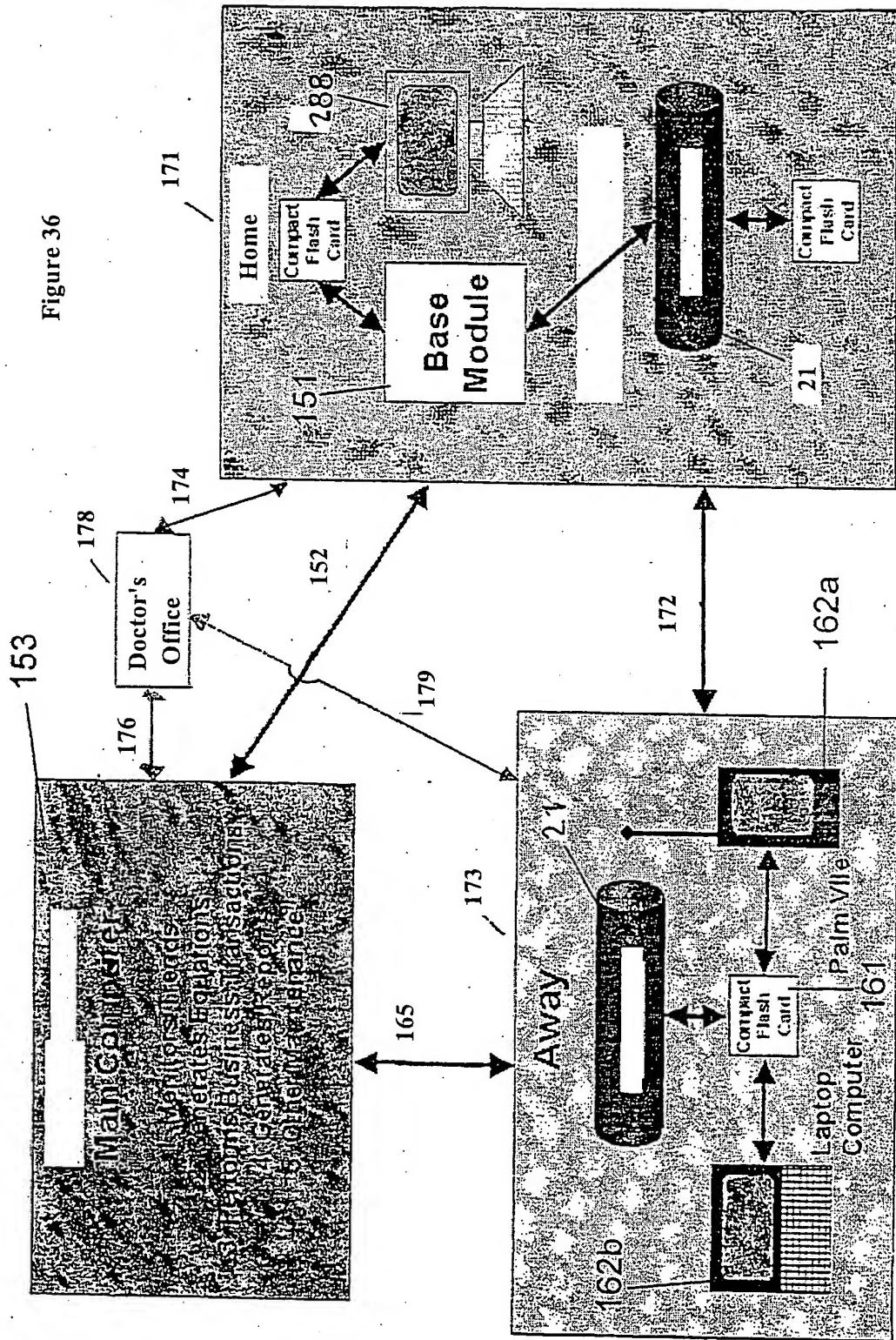
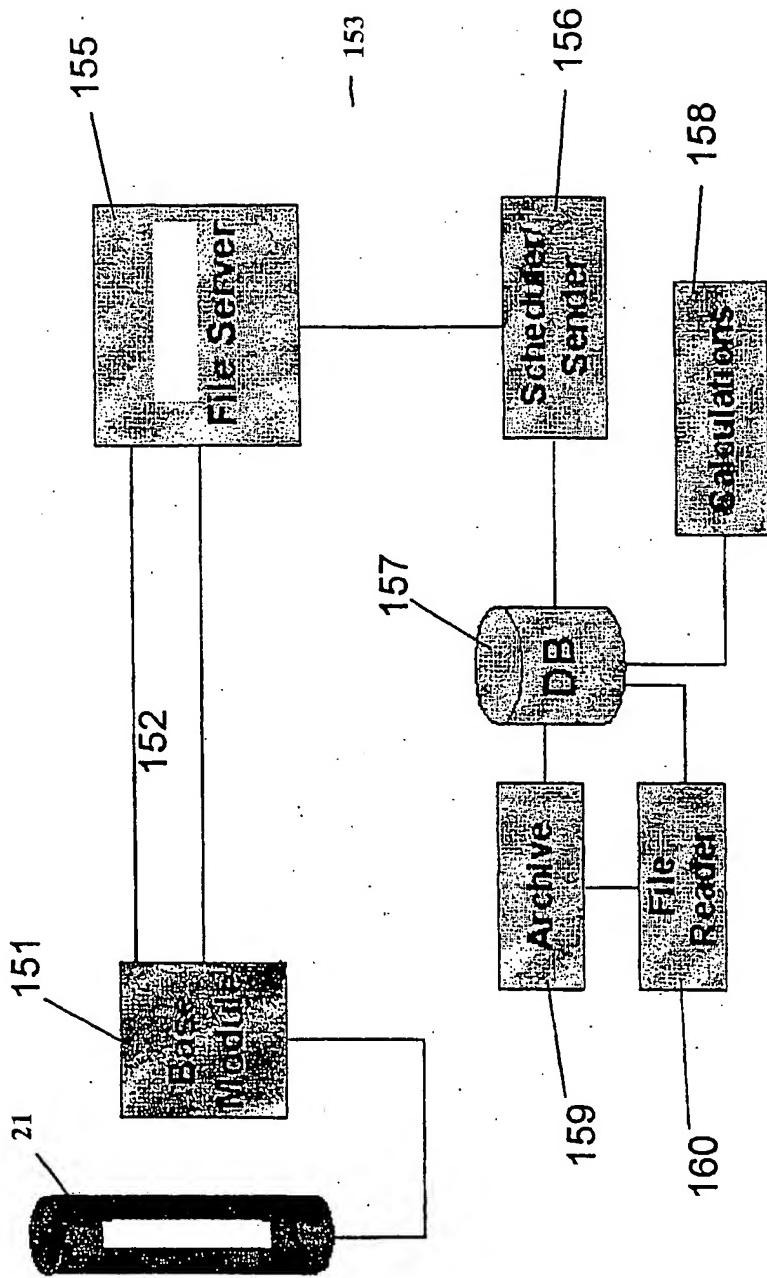


Figure 37



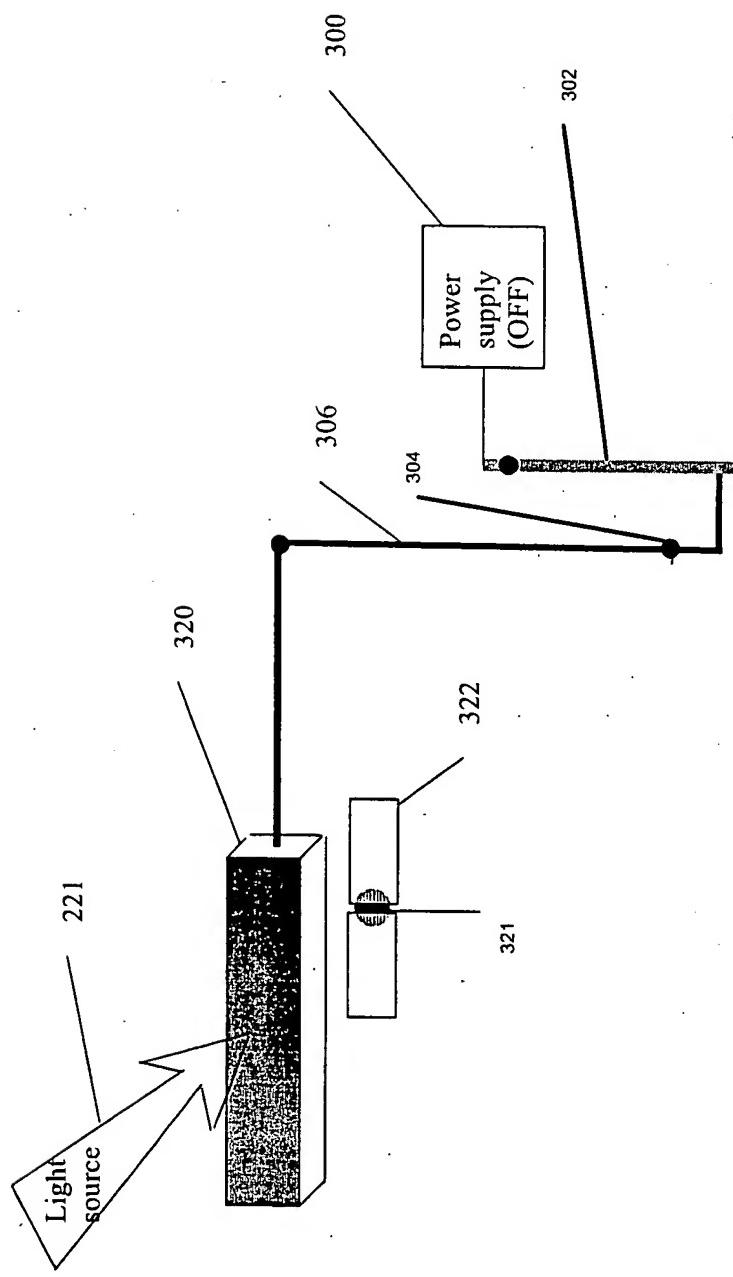


Figure 38a

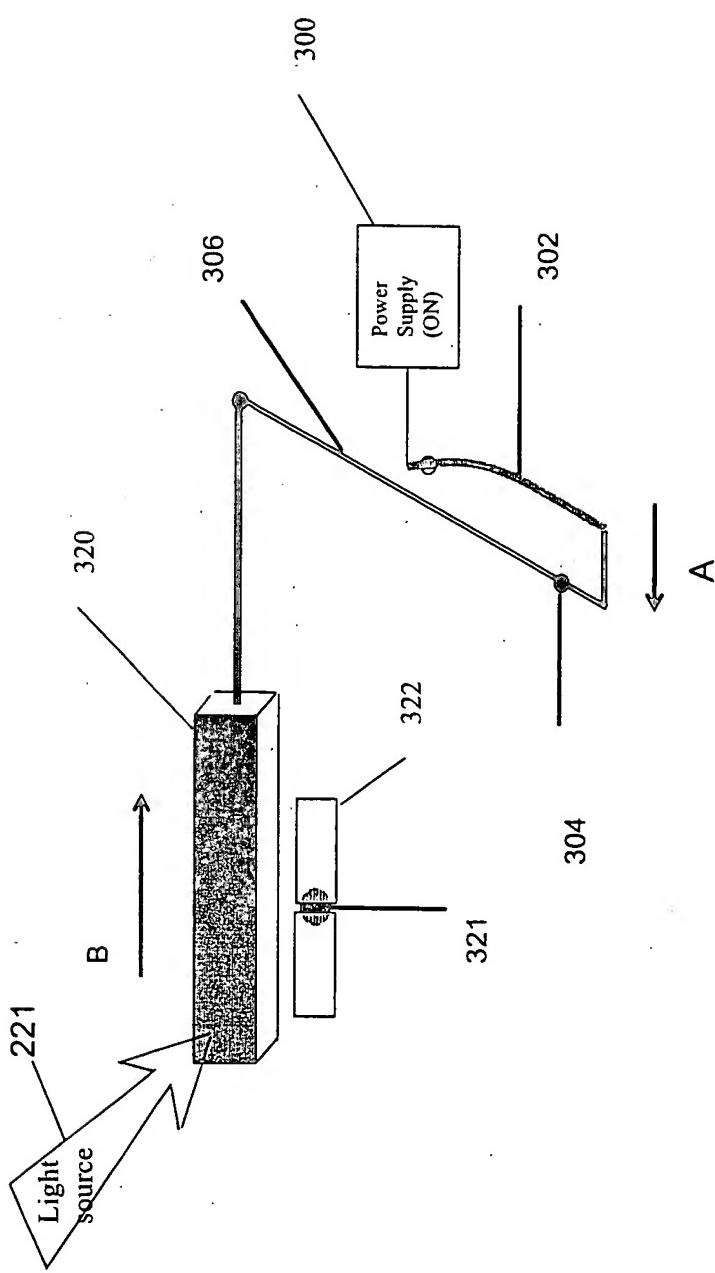


Figure 38B

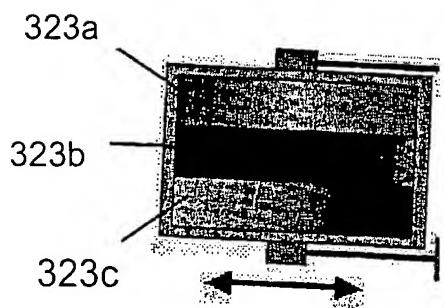


Figure 39A

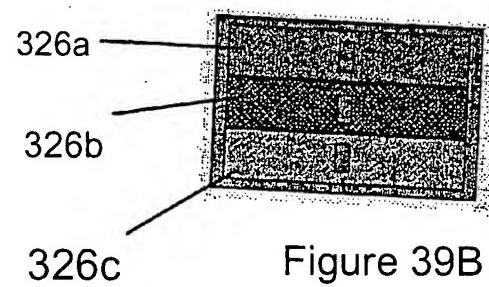


Figure 39B

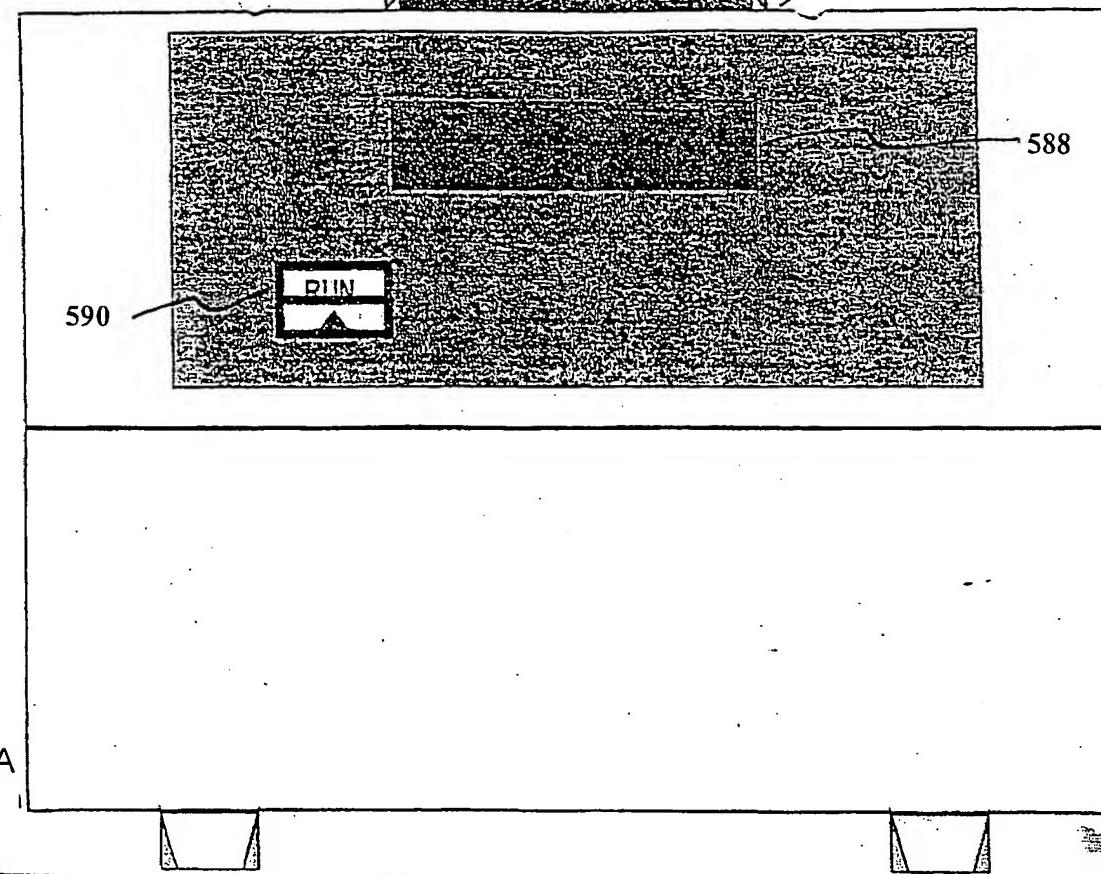


Fig. 40A

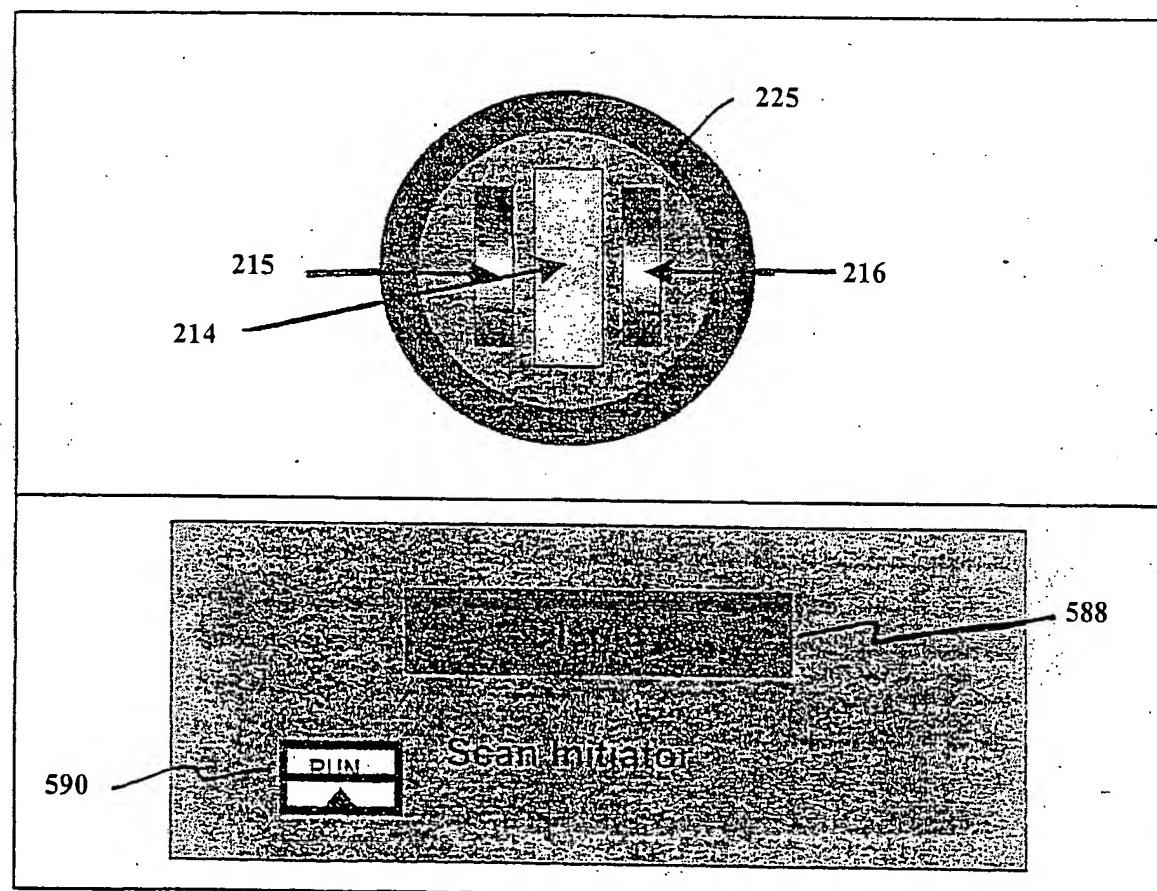


Fig. 40B

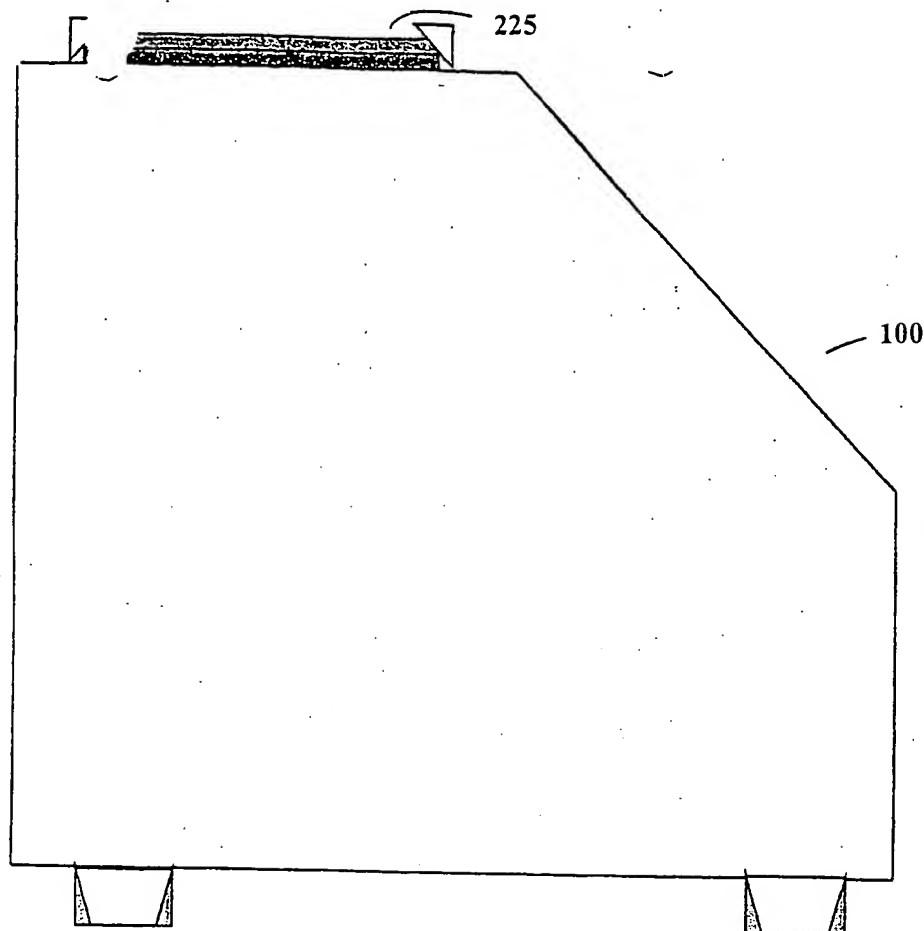


Fig. 40C

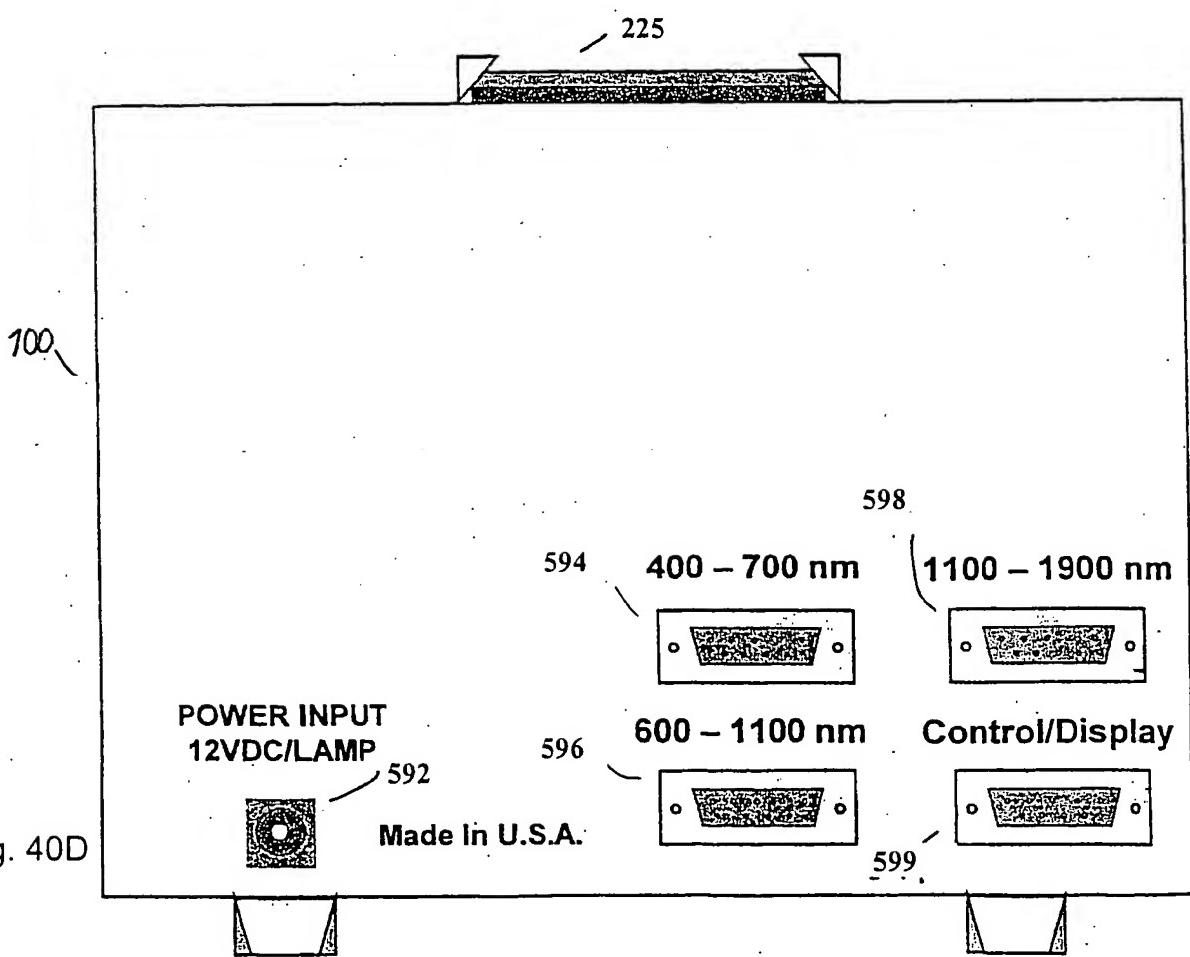


Fig. 40D